

# National Conference for Leaders of Strength and Conditioning in Schools

Tuesday 17 June 2025 at Leonardo Royal Hotel, Oxford

DIGITAL RESOURCE PACK

## Integrating Conditioning within School PE and Sport Programmes 3 Chris Dossett

Long Term Athlete Development in Elite Sport: Arsenal FC Case Study 25

Des Ryan

Working with Aspiring Athletes in the School Context 109
Kevin Paxton

Data Analysis for Strength and Conditioning Coaches: Tracking Meaningful Change 176

Dr Anthony Turner

Technology to Support Strength and Conditioning 198
Output Sports

Maturation: Assessment, Interpretation and Action 219
Des Ryan

## **Integrating Conditioning within School PE and Sport Programmes**

**Chris Dossett Chair of PADSIS** 

## Working with your Director of Sport

## **Chris Dossett**





## **Why This Matters**

• The most effective school programmes are joined up.

When S&C coaches and DoS work in partnership, pupils benefit.

• "Physical Education is for every child, not just the first team."

• Let's shift from silos to synergy.











## Understanding the Role of the DoS

- Strategic oversight of all sport, PE and physical activity.
- Balancing competitive sport, participation, health and wellbeing.
- Leading a team, setting vision, juggling priorities.
- Often answerable to Heads, parents, governors & inspection frameworks.

"Above all, the most impactful DoS cultivate trust through agency rather than authority."





## Sit Down and Stand Up!







#### The Role of the S&C Coach in Schools

Delivering high-quality physical development.

Supporting injury prevention, long-term athletic development (LTAD).

- Working across multiple sports & with varied ability groups.
- Sometimes a bolt-on needs better integration.





## You Don't Possess The God Particle!





## Integration, Not Addition

Align S&C philosophy with school's Sport Vision & PE curriculum.

Plan collaboratively with PE staff, coaches & the DoS.

- Attend fixtures, training sessions, meetings be seen, be heard, be known.
- Use shared language: physical literacy, readiness, wellness.







## **Building Trust and Culture**

Start with respect: relationships > reps

Show impact through simplicity – don't overwhelm with jargon

• Understand pastoral, academic and behavioural demands on pupils

"Create the weather" set a positive tone, even when energy is low.





#### Difficult Conversations Made Easier

#### **Typical tensions:**

- Overtraining vs under-preparation
- First team favouritism
- Changing room territory

#### **Tactics:**

- Use data sparingly but wisely
- Focus on shared outcomes
- Assume positive intent
- Listen, then speak





## A Programme for All – Not Just First Teams

S&C should build every pupil's confidence, competence and motivation

Offer developmentally appropriate sessions

• Champion girls' programmes, late-developers, and 'non-sporty' pupils

Collaborate with PE on curriculum content





## **Embedding Lifelong Participation**

- Make sessions fun, engaging and safe
- Introduce pupils to activities they can do after school ends
- Promote walking, circuits, resistance bands, mobility routines
- Celebrate progress and effort, not just performance

"We are in the business of habits that last a lifetime."







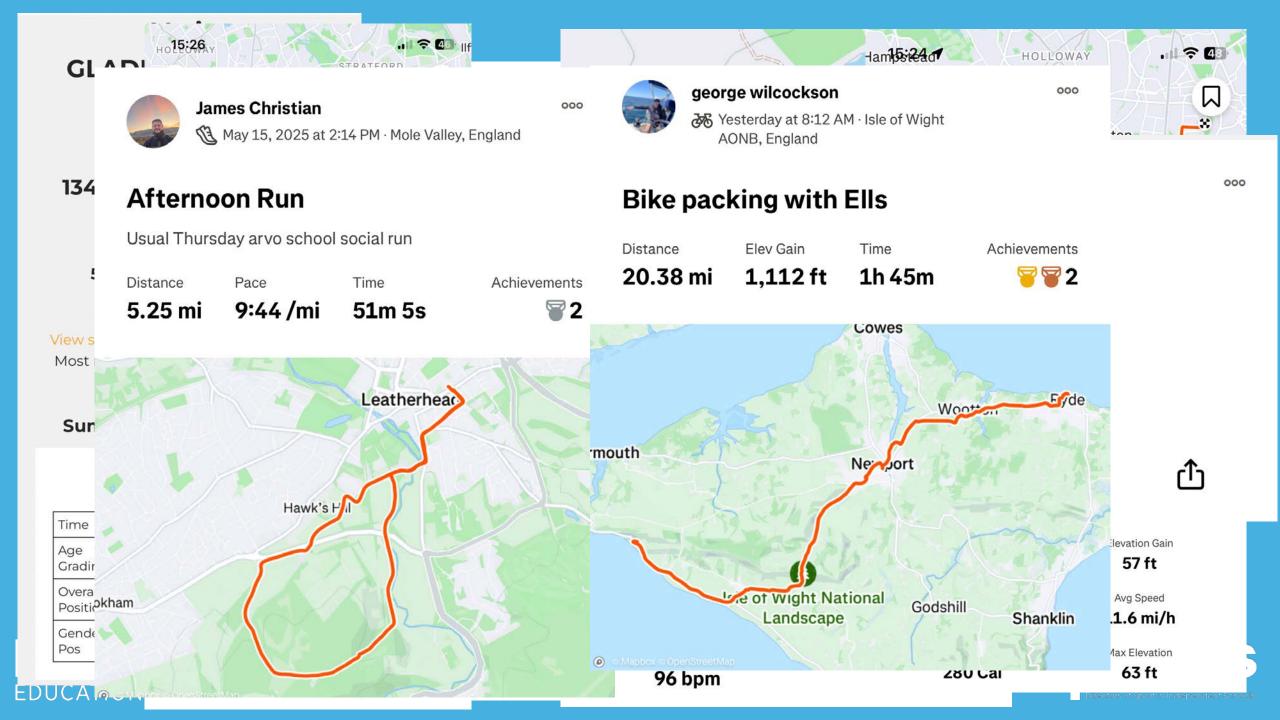
#### Throughout life

Influenced across the lifecourse by individual, social and environmental factors.









## The Best Relationships I've Seen...

• Trust, open communication, and mutual respect

Clarity of roles – but flexibility of thinking

Shared values: compassion, optimism, tenacity, enthusiasm

Collective commitment to inclusive excellence







# Compassion is a competitive advantage







## **Final Thoughts**

Physical development is not a bolt-on – it's the foundation

DoS and S&C coaches can lead together when they listen to understand

- Every child deserves a meaningful PE & sport experience
- You are not "just the S&C coach" you are a changemaker









## **Embracing a Growth Mindset**

#### **Transforming Challenges**

A growth mindset enables individuals to view challenges as opportunities for personal and professional development.

#### **Encouraging Team Growth**

Leaders play a crucial role in fostering a growth mindset within their teams by promoting collaboration and continuous learning.

#### **Personal Development**

Adopting a growth mindset leads to continuous personal improvement and skill enhancement, benefiting both individuals and organizations.





## **Questions & Discussion**

What has worked well for you?

Where are your pinch points?

What do you need from your DoS?





# **Long Term Athlete Development in Elite Sport:**Arsenal FC Case Study

**Des Ryan**Director of Sport and Wellbeing, University of Galway

Athlete

Legil Na

Sport

Sport

Athlete Development in Elite Sport: Arsenal **Academy Case** Study.



University of Galway.ie





#### **Qualifications**

BSc - Sports Science MSc - Strength & Conditioning BASES (High Performance Sports Accredited) Chartered Scientist **UKSCA** Accredited World Rugby - Educator & Trainer (Level 1 & 2 S&C) IRFU - Tutor (IRFU CCC) IAWA - Level 1 & 2









**IRFU** 







Youth Development Coach 1997-1999 Head of Fitness 1999-2008



Irish Rugby

Fitness Education Manager 2008-2013

#### **World Rugby**

Strength & Conditioning Advisor 2008-Present

#### India Cricket (National Cricket Academy)

Assess & Educate Academy S&C Coaches 2019 - 2023

#### **Arsenal FC**

Head of Sports Medicine & Athletic Development (Academy) 2013-2021

#### Setanta College

Director of Coachina & Athletic Development 2021-2024

#### **Gaelic Games**

Sports Science Working Group / Coaching Advisory Group 2021 - 2024

#### **Brentford FC**

Academy Athletic Development Advisor 2024 - Present







Director of Sport & Physical Wellbeing 2024-Present

















#### **Accreditations**

































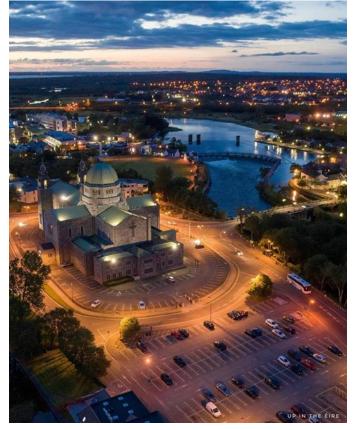




















## New Project – Director of Sport & Physical Wellbeing. University of Galway





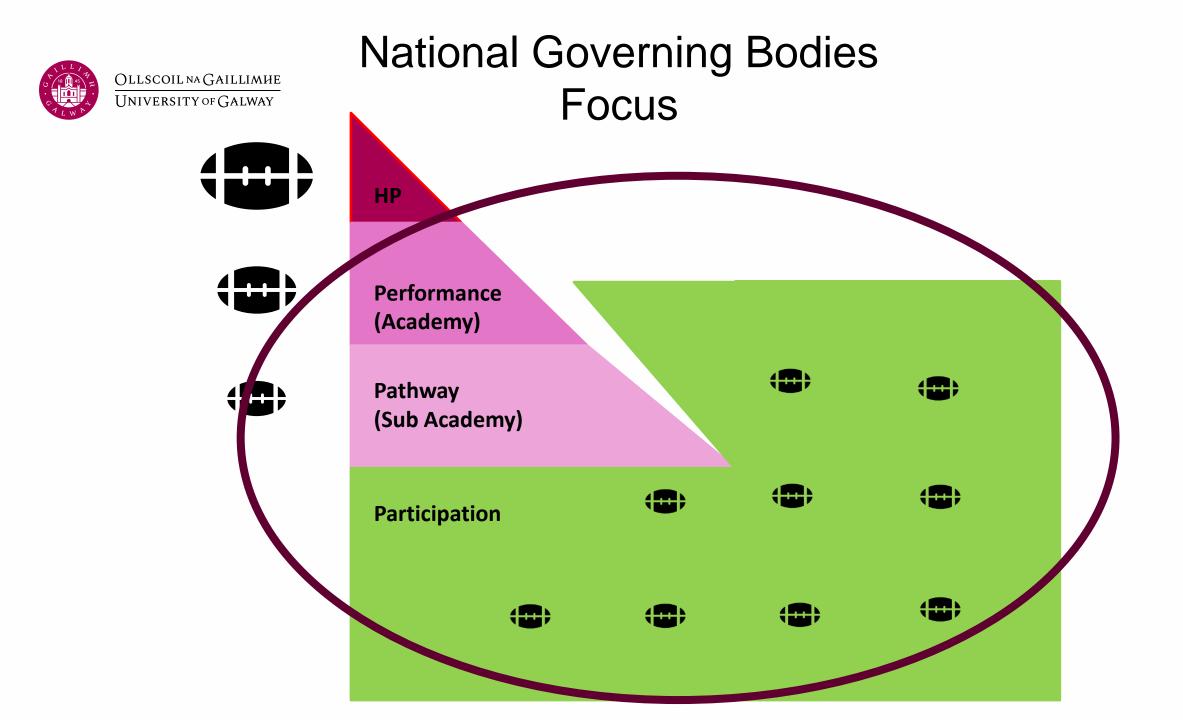








## ADVICE & SUGGESTIONS



# ARSENAL ACADEMY 2012 TO 2021

### Spórt

2012

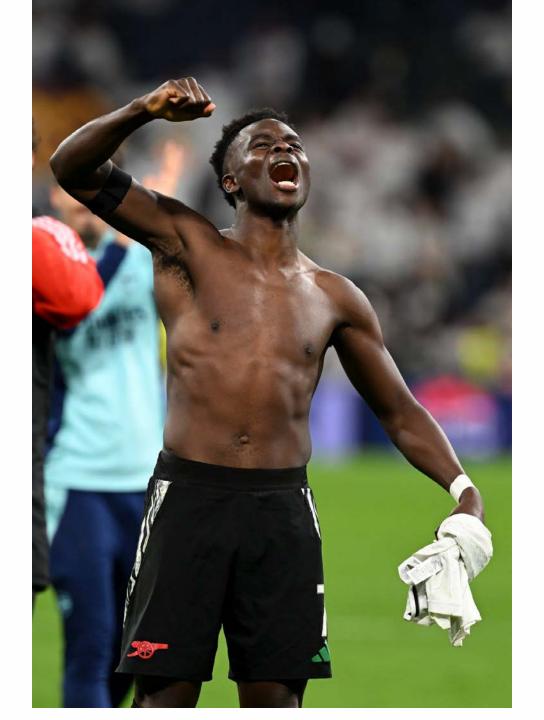


# OBSERVE THESE PLAYER. WHAT AREYOUR CONCERNS?











































### 2021

# I WOULD LIKE TO SHARE SOME SUGGESTIONS





## 



### **Academy Graduates with first team**















# SUGGESTION – HAVE A CLEAR PHILOSOPHY





























# SUGGESTION – HAVE A CLEAR VISION, MISSION & PILLARS











# SUGGESTION — HAVE CLEAR VALUES & LIVE THEM.

### **Facilities**



### **Hale End Layout Ariel View**





















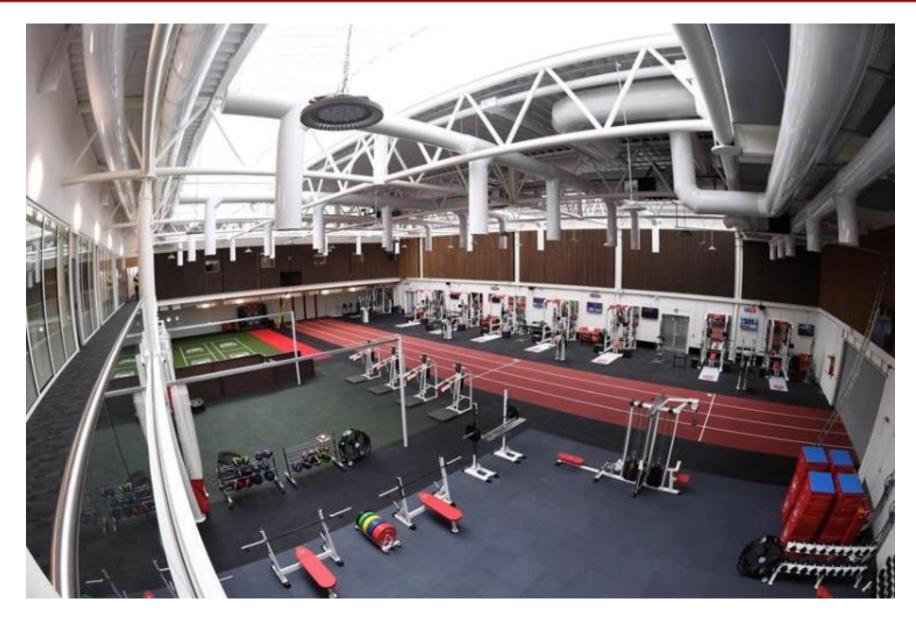


















### Population







### Coaching



### Talent ID



# SUGGESTION — HAVE A PHYSICAL DEVELOPMENT FRAMEWORK.





### **Developing World-Class** Soccer Players: An **Example of the Academy Physical Development Program From an English Premier League Team**

Desmond Ryan, MSc, Colin Lewin, BSc (Hons), SRP, Shad Forsythe, MS, ATC, CSCS, and Alan McCall, PhD, 1.2 <sup>1</sup>Research and Development Department, Arsenal Football Club, London, United Kingdom; and <sup>2</sup>Research & Development Department, Arsenal Football Club, Edinburgh, United Kingdom

### ABSTRACT

THE ROLE OF THE YOUTH ACAD-EMY IN ELITE SOCCER IS TO CRE-ATE WORLD-CLASS PLAYERS. THIS INVOLVES TARGETED DEVELOPMENT OF A MYRIAD OF FACTORS, INCLUDING TECHNI-CAL, TACTICAL, PSYCHOLOGICAL, AND PHYSICAL QUALITIES. THE ROLE OF SPORTS SCIENCE AND MEDICINE IS TO OPTIMIZE THE PHYSICAL DEVELOPMENT OF YOUNG PROMISING PLAYERS. IN LINE WITH THE MULTIFACETED NATURE OF PLAYER DEVELOP-MENT, THE SPORTS SCIENCE AND MEDICINE DEPARTMENT MUST INTEGRATE EFFECTIVELY INTO THE OVERALL YOUTH ACADEMY. THE PURPOSE OF THE PRESENT ARTICLE IS TO OUTLINE THE OB-JECTIVES, METHODS, AND OPER-ATIONS OF A SPORTS SCIENCE AND MEDICINE DEPARTMENT OF

Address correspondence to Desmond Ryan, dryan@arsenal.co.uk.

ONE OF THE BIGGEST SOCCER TEAMS IN THE WORLD.

### INTRODUCTION

s with many sports, the identification of talent in soccer is fol-Lowed by the selection onto a systematic program (the academy) for developing playing abilities and nurturing the individual toward realizing potential that has already been predicted (26). Therefore, the role of the youth academy represents an integral component in the long-term development of soccer players (19). Success in young soccer players and ultimately, later success (e.g., achieving an elite playing standard, obtaining a professional contract) is the product of a myriad of factors including training history and match experience (14,15), technical (26), motor (8), and perceptual cognitive (29) skills and also personal, social, and cultural factors (26). Other physically related parameters such as remaining free of injury (26), anthropometric (e.g., body size, percent body fat), and fitness/strength-derived qualities

(e.g., aerobic fitness, maximal sprinting, maximal anaerobic power, jumping capacity) also contribute to this myriad of predictors and success (19). As the International Olympic Committee eloquently described it, "the goal of youth athletic development is to develop healthy, capable and resilient young

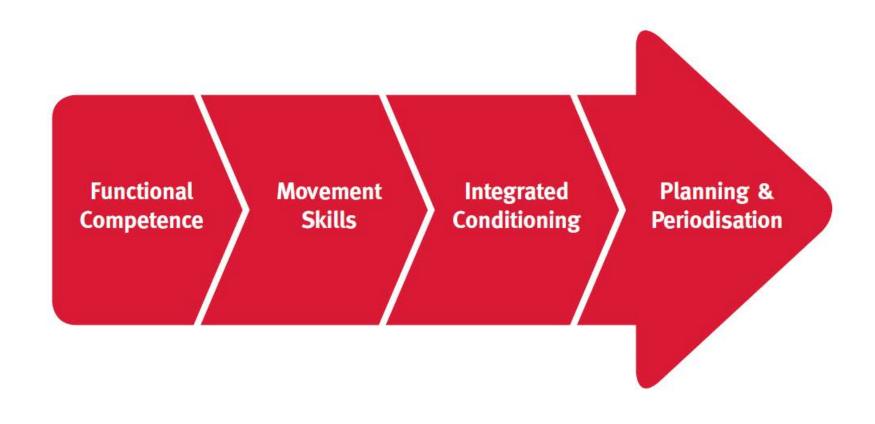
Frameworks for athlete physical development should be flexible, using a combination of both best practice and experience underpinned by highquality up-to-date research (4). Although the sports performance research literature is increasing exponentially, this only forms one part of the puzzle and insights into best practice, that is, what is being done in the practical setting by experts servicing athletes, is not as widespread. It has recently been proposed in the elite sporting environment that we must start to share our knowledge and experiences to learn from each other and

KEY WORDS: talent: youth: football



28/05/2025

### THE ARSENAL ACADEMY APPROACH TO PHYSICALLY DEVELOPING YOUNG PLAYERS





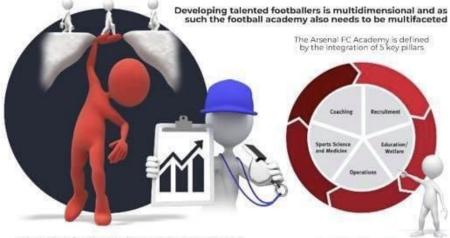


### **Developing World Class Soccer Players**

An example of the academy physical development program from an English Premier League team



Reference: by Ryan et al. SCJ 2017
Designed by @YLMSportScience



### The Physical Development Framework

An arrow approach is used to progress the player to the next level as quickly and efficiently as possible

THE ARSENAL ACADEMY APPROACH TO PHYSICALLY DEVELOPING YOUNG PLAYERS



### **EMPHASIS 1**

Functional competence - good mobility and stability and then moving onto more advanced strength activities

### **EMPHASIS 2**

Movement Skills – achieve mature level movement skills and then moving onto more advance speed activities

### **EMPHASIS 3**

integrated Conditioning – As we are a highly technical club most of the on field conditioning is completed through the game

### **EMPHASIS 4**

Planning and Periodisation - We make sure the players don't do too much or too little

### **Key consideration**

Maturation is an important part of the academy in the areas of program design and talent selection. The key to success is that all departments are aware of the players stage of biological maturation.

### Finally, a flexible framework is integral

The Academy framework must be dynamic and flexible continuous evaluation is integral! The Academy prioritises quality injury audits, fitness testing, workload monitoring, player profiling and of course reviewing the progressions of players through to becoming an adult professional footballer



The Academy puts huge importance in the physio/nutritionist/S&C having a good relationship with the player like a big brother or favourite uncle











## SUGGESTION — LONG TERM PHYSICAL DEVELOPMENT.

### U9 to U12



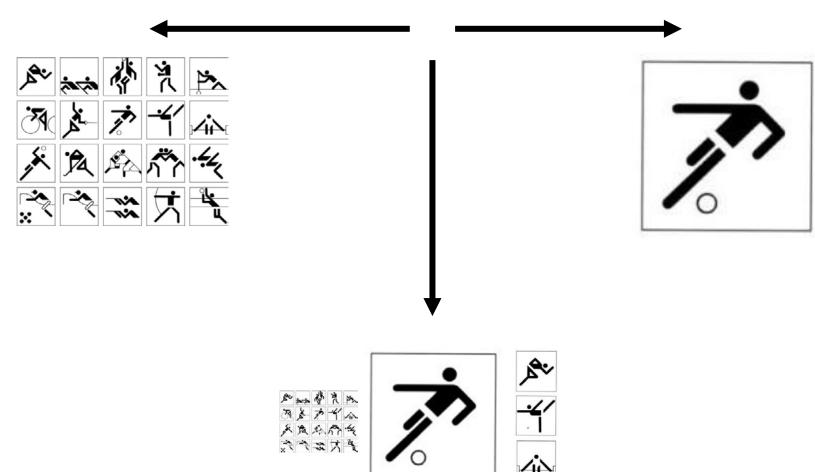




### U13 to U16

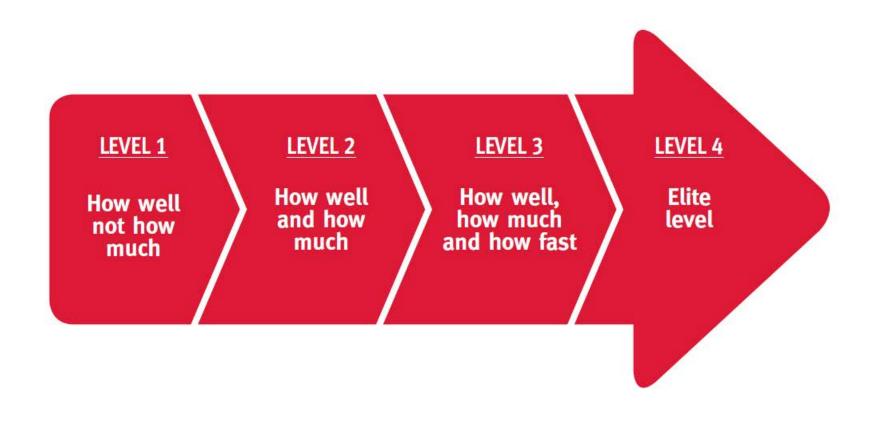


## Sampling or Early Specialisation or Hybrid





### THE ARSENAL FC SPORTS SCIENCE AND MEDICINE PHYSICAL DEVELOPMENT FRAMEWORK LEVELS







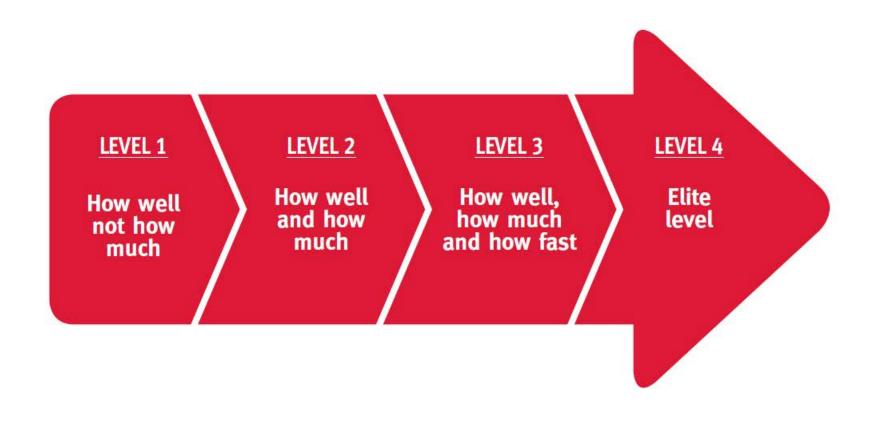




### U18 to U23



### THE ARSENAL FC SPORTS SCIENCE AND MEDICINE PHYSICAL DEVELOPMENT FRAMEWORK LEVELS





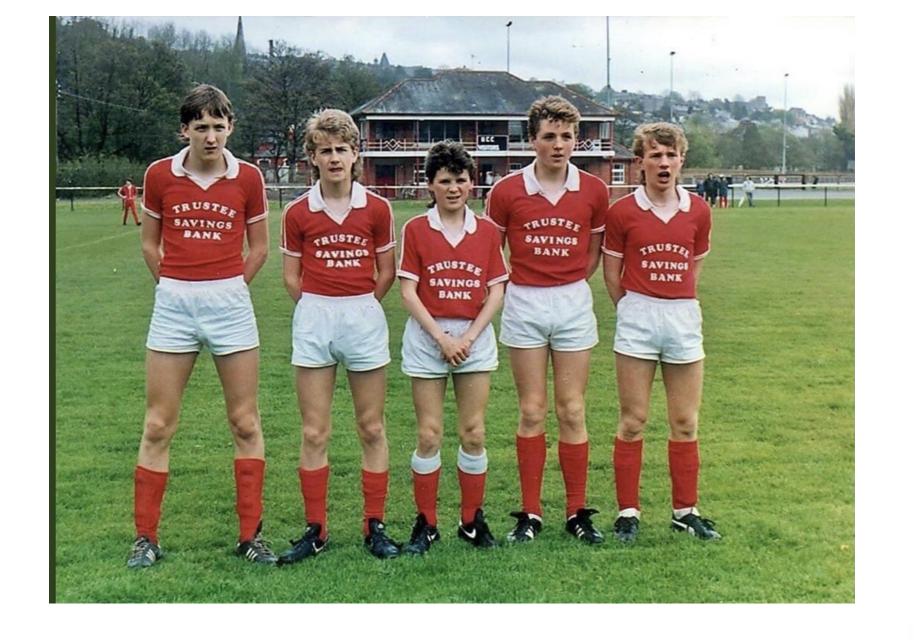


# Priority Session

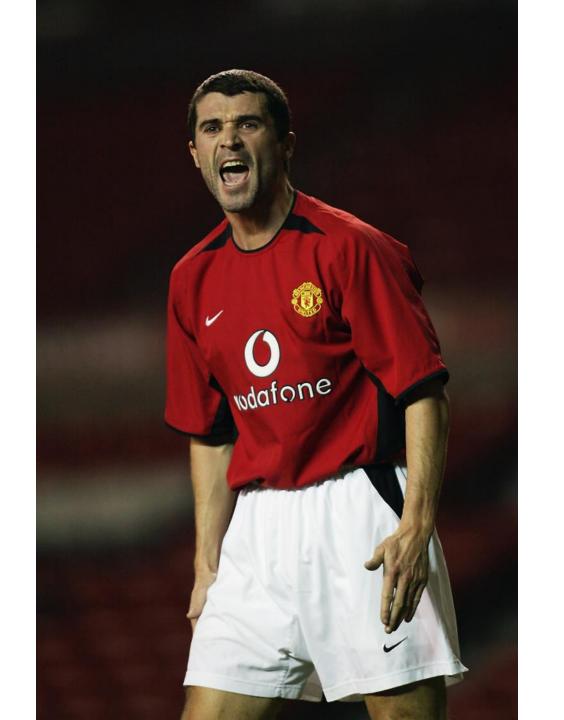


# SUGGESTION -UNDERSTAND GROWTH & MATURATION.

## QUESTION



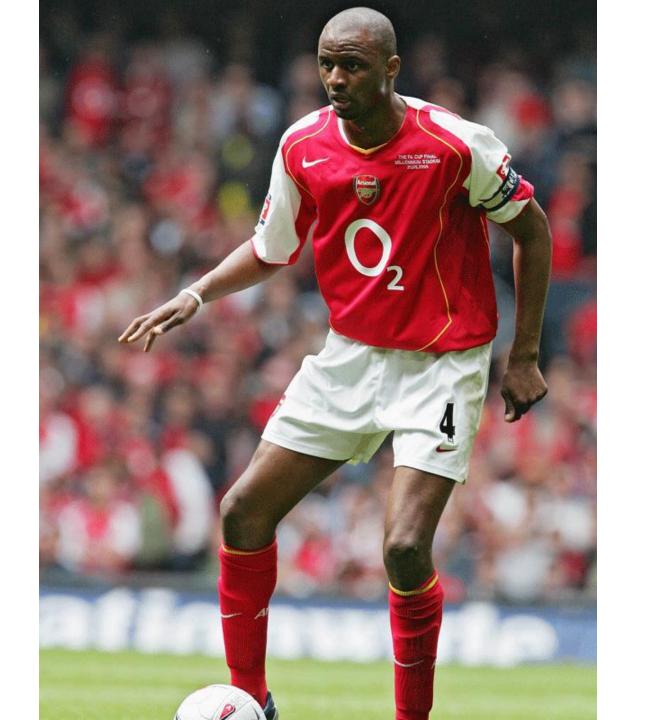


































## Nutrition



# Psych / Social



### Sport & Exercise Psychology Review

Chris Wagstaff, University of Portsmouth Joanne Hudson, Swansea University

### Founding Editor

David Lavallee, Abertay University

### Editorial Roard

Jamie Barker, Loughborough University Mark Beauchamp, University of British Columbia Francesca Cavallerio, Anglia Ruskin University Stewart Cotterill, Anglo-European College of Chiropractic University College Martin Hagger, Curtin University Jain Greenlees, University of Chichester

Paul McCarthy, Glasgow Caledonian University Iain Greenless, University of Chichester Marc Jones, Manchester Metropolitan University David Lavallee, Abertay University

Andrew Manley, Leeds Beckett University Aidan Moran, University College Dublin Ailsa Niven, University of Edinburgh Nikos Ntoumanis, Curtin University Tim Rees, Bournemouth University David Tod, Liverpool John Moores University

Sport & Exercise Psychology Review is the official publication of the Division of Sport & Exercise Psychology, and is distributed free of charge to members bi-annually. Non-members can purchase recent issues from the British Psychological Society online shop.

Division of Sport & Exercise Psychology The British Psychological Society, St Andrews House,

48 Princess Road East, Leicester LE1 7DR.

Tel: 0116 254 9568; Fax: 0116 227 1314; Email: info@bps.org.uk; Web: www.bps.org.uk

Advertising space is subject to availability and is handled by an external company, Cambridge Publishers Ltd (CPL). Please contact Kai Theriault at CPL for advertising rates and to book space (Kai Theriault, Media Sales Executive; 1 Cambridge Technopark, Newmarket Road, Cambridge, CB5 8PB, UK; phone: 01223 378 051; email: kai.theriault@cpl.co.uk). Situations vacant advertising cannot be accepted, as it is the Society's policy that job vacancies are published online at: www.jobsinpsychology.co.uk.

Views expressed in Sport & Exercise Psychology Review are those of individual contributors and not necessarily of the Division of Sport & Exercise Psychology or the British Psychological Society. Publication of details of conferences, events and organisations does not necessarily imply approval or endorsement by the Division of Sport & Exercise Psychology. Publication of advertisements is not an endorsement of the advertiser, nor of the products and services advertised. Any subsequent promotional piece or advertisement must not indicate that an advertisement has previously appeared in Sport & Exercise Psychology Review.

Copyright for published material rests with the British Psychological Society unless specifically stated otherwise. As the Society is a party to the Copyright Licensing Agency (CLA) agreement, articles published in Sport & Exercise Psychology Review may be copied by libraries and other organisations under the terms of their own CIA licences (www.cla.co.uk). Permission must be obtained from the Society for any other use beyond fair dealing authorised by copyright legislation. For further information about copyright and obtaining permissions, go to www.bps.org.uk/permissions or email permissions@bps.org.uk.

### Deadlines for notices of forthcoming events

Copy must be received by 1 October (for issue 1) and 1 April (issue 2).

### Everything matters: The importance of shared understanding to holistically support the psycho-social needs of academy footballers

Kate Green, Darren Devaney, Giles Carré, Alex Hepton, Rebecca Wood, Chris Thurston & Duncan Law

Elite youth sport environments present unique psychological and social challenges as well as physical challenges to young athletes. In recent years there has been a growing interest in the impact of the psychological and social context across sport including elite football development. However, relatively little has been shared about how these ideas can be put into practice in real world football academies. This paper aims to illustrate concepts and values that underpin the psychological and social environment in a premier league football academy. It describes the work of the academies 'psych-social team' (PST), who work with, and within, the wider academy. The aims of the PST are to integrate these ideas across the whole multidisciplinary team (MDT) to create an environment that is both safe and psychologically informed to enhance performance and development of young players. By sharing this developing model, we hope to spark discussion, and collaboration across football about how best to create practical and operational solutions to holistic psychological and social development. Keywords: football; performance; psychology; emotional wellbeing; safeguarding; mental health; psycho-

T IS CLEAR THAT THE WORLD of elite sport is not representative of 'normal life'. To reach the elite level requires a high level of technical, tactical, physical, psychological, and social attributes, as well as immense amounts of time. Indeed, athletes face psychological and social challenges that would be tough for most people (Arnold & Fletcher, 2012), never mind a child or young adult at academy level.

The psychological and social aspects of sport have been recognised in a globally led expert consensus statement as the foundations of well-rounded athletes with the skills and resilience to perform (Bergeron et al., 2015). The nature of elite sport, however, can create an over-narrowing of identity to the detriment of other areas (Carless & Douglas, 2009), such as sacrificing social environments and activities which are age-appropriate in the pursuit of perfor-

mance, regular training, and match commitments. Having been in a high-performance role has an impact on the psychological and social development of young players (Baillie & Danish, 1992; McKnight et al., 2009), and, in turn, can negatively impact psychological wellbeing and resilience, and ultimately performance (Fletcher & Sarkar, 2016). It is a rollercoaster of an environment with the inevitable lows: injury, deselection, and poor performance, and highs: gaining recognition, winning trophies, serious financial reward, and performing well (Sarkar & Fletcher, 2014). Henriksen et al. (2019. p.1) highlight the importance of the environment by suggesting that it can either 'nourish or malnourish athlete mental health'. Carless and Douglas (2009) highlight the growing awareness of how sports performance, particularly at the elite level, is affected by many personal, lifestyle, and envi-

Sport & Exercise Psychology Review, Vol. 16 No. 1



## TOGETHER — WE —

ADVISE & SUPPORT THROUGH TOUGH STUFF

PROMOTE SOCIAL DEVELOPMENT HERE & ON TOURS

CREATE A PSYCHOLOGICALLY SAFE ENVIRONMENT

MANAGE THE HOLISTIC CURRICULUM

PROVIDE A SAFE SPACE TO TALK

PROMOTE WELLBEING

PLAYER LIAISON & WELFARE OFFICER

PERSONAL DEVELOPMENT 8
PSYCHOLOGY PRACTIONER

TEAM & INDIVIDUAL
PERFORMANCE & WELLBEING
ON & OFF THE PITCH

PLAYER & PARENT LIASON PERFROMANCE LIFESTYLE &LIFE SKILLS

RELATIONSHIPS CONCERN OF ABUSE/HARM TRAUMA







### Outcome?























SBOTOP



















### **Academy Graduates with first team**













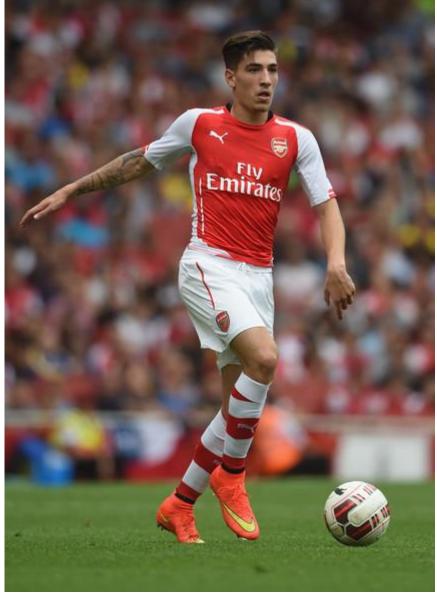












"There are some people who are just born quick and some people that are born slower," the full back said. "But I worked a lot on my speed and power with the conditioning coach last year - that's something which has helped me a lot.

"The work that you don't see, in the shadows, really shows on the pitch. My time over 40 metres was the fastest. It's something I didn't expect - we were just having a test and then they told me I was the fastest at the club. It's nice to be able to say that I'm the quickest player."













# Working with Aspiring Athletes in the School Context Kevin Paxton Vice-Chair, UK Strength and Conditioning Association

# APPLYING PROFFESSIONAL STANDARDS in S & C

National Conference for Leaders of Strength and Conditioning in Schools



**Director of Memberships** 







# An S & C JOURNE — Lessons Learnt





MID CAREER MID TO RECENT CAREER

UNIVERSITY of DERBY



2024







NOTTINGHAMSHIRE **COUNTY CRICKET CLUB** 



2016



















**COACH EDUCATION** 

**GYM DESIGN** 





**VARIED DELIVERY STYLES** 

PLAYER PROFILES

MANAGEMENT PROCESSES

**BENCHMARKING** 

INTERNSHIP STRUCTURES

INJURY PREVENTION SYLLABUS

REDSTRICE





STAFF DEVELOPMENT FRAMEWORK

































# Role of UKSCA

# Articles of the Association

- To establish and maintain high professional standards for UK strength and conditioning practitioners
- The promotion and dissemination of good practice, knowledge and research in strength and conditioning
- ☐ To facilitate communication among UKSCA members
- ☐ To represent the interests of the membership of the UKSCA
- Through our members, ensure that world class coaching in strength and conditioning is available to athletes at all levels in the UK

UKSCA Workshops					
Weightlifting for Sports Performance	Plyometric, Agility and Speed	Planning Effective Programming	Foundations in S&C		
Applied Coaching Science					
UKSCA Accreditation					
Practical Assessment: WL	: :aa.aa.		Theory Assessment: MCQ		



# **Different Impact Areas**

Membership Base



- Elite Sport
- Pathway Sport Development
- ✓ Health & Social Physical Activity
- ✓ Education & Research
- ✓ Youth & Schools Athleticism



# BODY OF KNOWLEDGE SECTORS







ELITE SPORT = any senior level sporting interest



PATHWAY DEVELOPMENT SPORT = Uni athlete S & C, TASS programs



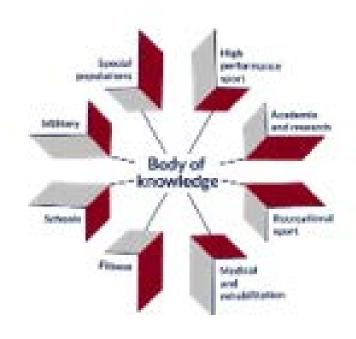
 HEALTH & WELLBEING = encourage PT sector and mental health initiatives



 EDUCATION & RESEARCH = embedding educational content into degree programs and further research into S & C



TACTICAL = armed forces / emergency services potential in the future





### ACCREDITED S&C COACH CHARTERED FFLLOW

### EDUCATE THE COACH FOR THE CLIENT

Heads of S & C / Physical Performance

- · Mentor & Develop existing staff
- Disseminate S & C wider knowledge
- Lead on overall S & C strategy
- 10 years + approx. experience

### ACCREDITED S&C COACH CHARTERED MEMBER

### EDUCATE THE CLIENT

Lead S & C Coach

- · Quality assure assistant staff
- · Disseminate S & C process & practise
- Lead on S & C delivery
- 4-8 years + approx. experience

### S&C COACH



### ENGAGE THE CLIENT

Assistant S & C Coach / Early career development coach

- · Learn the theories of S & C practise
- Practise prescribed S & C delivery
- Variety of S & C client exposure
- Master the Foundations of S & C coaching
- Begin the journey of pre-accreditation workshops
- Review of UKSCA-IQ.
- Attend virtual and face to face events
- 1-3 years + approx. experience

# **S&C TRAINER**



### ENOUIRE FOR THE CLIENT

Individuals Interested in S & C / Physical Fitness

- UKSCA-IQ packages
- · Attend introduction events











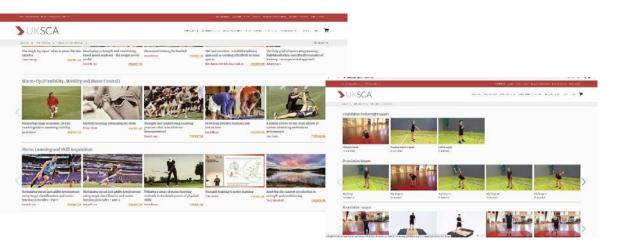


AFFILIATE MEMBER

### ENQUIRE FOR THE CLIENT

Individuals Interested in S & C /
Physical Fitness

- UKSCA-IQ packages
- · Attend introduction events



### SCHOOLS & ATHLETIC DEVELOPMENT

- PE Teachers
- Community Sports Coach

### **SPORT**

- Operations Manager
- Technical Coaches
- Non S & C support staff

### **HEALTH & WELLBEING**

- Physios
- Chiropractors
- Dieticians
- Sports Centre Manager
- Paramedic

### **EDUCATION & RESEARCH**

- Laboratory Technicians
- Heads of Schools

### **TACTICAL**

- Squadron Leader
- Operations Manager

GENERAL MEMBERSHIPS

Affiliate member S&C Coach Pathway

Associate member

Affiliate member S&C Trainer Pathway





### ENGAGE THE CLIENT

Assistant S & C Coach / Early career development coach

- Learn the theories of S & C practise
- Practise prescribed S & C delivery
- Variety of S & C client exposure
- Master the Foundations of S & C coaching
- Begin the journey of pre-accreditation workshops
- Review of UKSCA-IQ
- · Attend virtual and face to face events
- 1-3 years + approx. experience



### SCHOOLS & ATHLETIC DEVELOPMENT

- PE Teachers
- Schools Athletic Development Coach

### **SPORT**

- Technical Coaches
- Entry Level S & C Coaches
- Sport Scientists

### **HEALTH & WELLBEING**

- Personal Trainer
   (Employed / Self Employed)
- Physios
- Chiropractors
- Oestopaths

### **EDUCATION & RESEARCH**

- S & C Lecturers
- Sport Science Lecturers

### **TACTICAL**

Personal Training Instructor

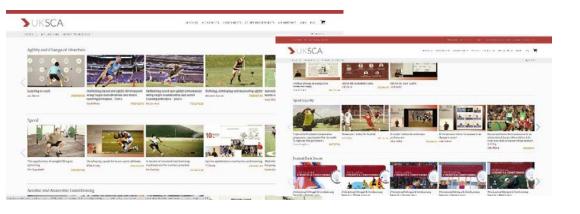




**ACCREDITED** S&C COACH CHARTERED **MEMBER** 

Lead S & C Coach

- Quality assure assistant staff
- Disseminate S & C process & practise
- Lead on S & C delivery
- 4-8 years + approx. experience



### SCHOOLS & ATHLETIC DEVELOPMENT

Lead Athletic Development Coach

### **SPORT**

- Head of S & C.
- Lead S & C Coaches
- **Lead Sport Scientists**
- **Physiotherapists**

### **HEALTH & WELLBEING**

- Senior Personal Trainer
- S & C Trainer Tutor

### **EDUCATION & RESEARCH**

- S & C Trainer / ASCC Tutor Assessor

# **S&C Trainer** S & C Module Leads

### **TACTICAL**

Senior Personal Training Instructor



**PROFESSIONAL** 

**MEMBERSHIPS** 

Accredited S&C Coach

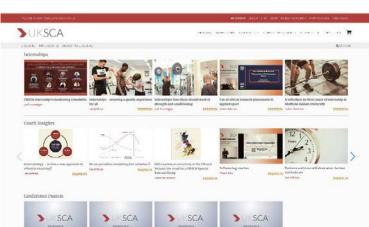
ACCREDITED S&C COACH CHARTERED FELLOW

### EDUCATE THE COACH FOR THE CLIENT

Heads of S & C / Physical Performance

- Mentor & Develop existing staff
- Disseminate S & C wider knowledge
- Lead on overall S & C strategy
- 10 years + approx. experience





### SCHOOLS & ATHLETIC DEVELOPMENT

Head of S & C

### **SPORT**

- National Lead S & C Coaches
- Head of Performance

### **HEALTH & WELLBEING**

National Project Advisor

## **EDUCATION & RESEARCH**

- Professorship in S & C
- S & C Trainer / ASCC Tutor Assessor

## **TACTICAL**

National Lead for Physical Fitness



# Pre-requisite STRENGTH

Pre-requisite SKILL

OBSTACLES



Technical experience /
Coaching cues
No. of Coaches

Equipment / ROM

Speed of Lift

**Loading Options** 



# **S&CTRAINER FORMAT**

### SCHEDULE

Wb	Content	Date	Venue	Hours	Style (F2F/SDL)	Summary
0	Pre-Recorded Video – UKSC-IQ	Pre-registration	Remote	3	SDL	Introduction to Course & Role of S & C Trainer
1	Workshop 1	Sat, Sun 6 <sup>th</sup> -7 <sup>th</sup> July	PB HQ	18	F2F	Foundation Workshop Attendance     Technical Models Practicals     Safety Assessment Practice
2	Remote Session 1	Wednesday 10 <sup>th</sup> July @ 6:15 pm − 7:45 pm	Microsoft Teams	2+4	F2F/SDL	Onboarding to the diploma and Assessment tasks     Technical models: squat, hinge, jump plus RAMP warm-ups
3	E-Learning		2+4	SDL	Section 2 Scientific Basis of S & C     Practise Technical Models – Squat, Hinge, Lunge, Run, Jump	
4	Remote session 2	Wednesday 24 <sup>th</sup> July @ 6:15 pm − 7:45 pm	Microsoft Teams	2+4	F2F/SDL	<ul> <li>Technical models: running, jump, unilateral foundation movements Push, Pulls, Rotations, Quadrupedal</li> </ul>
5	E-Learning			2+4		<ul> <li>Section 3 Effective Training</li> <li>Practise Technical Models – Squat, Hinge, Lunge, Push, Pull</li> </ul>
6	Remote session 3	Wednesday 7 <sup>th</sup> August @ 6:15 pm − 7:45 pm	Microsoft Teams	2+6	F2F/SDL	MOCK Assessment practice A     Technical Models Review TASK
7	E-Learning		2+4	SDL	Practise Assessment A     Practise Technical Models – Run, Jump, Rotation, Quadrupedal	
8	Remote session 4	Wednesday 21 <sup>±</sup> August @ 6:15 pm − 7:45 pm	Microsoft Teams	2+6	F2F/SDL	MOCK Assessment practice B & C     Technical Models Review TASK
9	E-Learning		2+2	SDL	Practise Assessment C     Review Technical Models – Lower Bilateral / Unilateral / Push / Trunk	
10	E-Learning		2+2	SDL	Practise Assessment A + C Planning Task     Review Technical Models	
11	E-Learning		3	SDL	Review Assessment Guidelines     Submit Assessment A + C Session Plans	
12	Workshop and assessment weekend: A.B.C	Sat, Sun 21 <sup>st</sup> – 22 <sup>nd</sup> September	PB HQ	18	F2F	2-days covering: Workshop and mock assessments Assessments: A, B and C
13	Remote session 5	Individual Basis	Microsoft Teams	2+4	F2F/SDL	Developing your 12-week programme and completing your portfolio
14	E-Learning		6	SDL	Section 4 Planning a Programme     Section 5 Program Design Guidelines     Submit Assessment D 12-wk programme Plan Evidence D1-D5	
15	Online Assessment D	Various	Microsoft Teams	2+4	F2F / SDL	Professional Discussion on Programme Design     Revecasing     Anatomy & Physiology Quiz
18-20	Remote session 6	Various	Microsoft Teams	2+4	F2F/SDL	These sessions are 1:1 support meetings with the tutor, to be arranged individually
22	Online Assessment E	Various	Microsoft Teams		F2F	Individual 1:1 online <u>assessments</u>









### CHIROSPORTS FITNESS LTD / UKSCA S&C TRAINER DIPLOMA

"Setting minimum standards of athletic development in all population groups with a focus on Maximising Performance & Minimising Injury."

### MICROSOFT TEAMS LINK FOR REMOTE SESSIONS:

flemate session 3	Week 2 - Wednesday 10" July @ 6:15 pm - 7:45 pm	
	Eavin Platon invited you to a Microsoft Teares Meeting:  Week 3 CE/FR UKEA SCT Course Remote Section 10 July 2029 113:5-13-5 (SWT) Meeting Tools (SWE) Meeting Tools (	
Remote session 2	Week 4 - Wisdenstein, 24°-July & G.15 pm - 745 pm  Knoth Fallens Invited you be a Nicosynth Tevens Meeting: CERT # URDON SOT Memorie Session 2 Week 4 - 24-July 2024  Meeting one: (SLEET LIGHTS ASTER Memorie Session 2 Week 4 1 Microsoft Tagons 1 Meeting one: (SLEET LIGHTS ASTER Memorie Session 2 Week 4 1 Microsoft Tagons 1 Meeting one: (SLEET LIGHTS ASTER Memorie Session 2 Week 4 1 Microsoft Tagons 1 Meeting one: (SLEET LIGHTS ASTER Memorie Session 2 Week 4 1 Microsoft Tagons 1 Meeting)	
Remote session 3	View 6 - Weinnessey 7* August (\$ 6.15 pm - 7.45 pm Konfe Yadina Indied you to a Nicosoft Townes Meeting: COFFE (\$100.05.05 CF) Remote Resion 3 Week 6 Of August 2004 13.51 - 3.945 (\$100.05.05 CF) Remote Session 3 Week 6 1 Microsoft Towns (\$12.51.05.05.05 Themose Session 3 Week 6 1 Microsoft Towns (\$12.51.05.05.05 Themose Session 3 Week 6 1 Microsoft Towns (\$12.51.05.05.05 Themose Session 3 Week 6 1 Microsoft Towns (\$12.51.05.05.05 Themose Session 3 Week 6 1 Microsoft Towns (\$12.51.05.05.05 Themose Session 3 Week 6 1 Microsoft Towns (\$12.51.05.05.05 Themose Session 3 Week 6 1 Microsoft Towns (\$12.51.05.05.05 Themose Session 3 Week 6 1 Microsoft Towns (\$12.51.05.05.05 Themose Session 3 Week 6 1 Microsoft Towns (\$12.51.05 Themose Session 3 Week 6 1 Microsoft Towns (\$12.51.05 Themose Session 3 Week 6 1 Microsoft Towns (\$12.51.05 Themose Session 3 Week 6 1 Microsoft Towns (\$12.51.05 Themose Session 3 Week 6 1 Microsoft Towns (\$12.51.05 Themose Session	
flemate session 4	Week 8 - Wisdresday 21' August 8 6 15 pm - 745 pm  Keeke Perina Indicat par to a Microsoft Teams Marking  CSA BUCKSCA STR. Planteds Session 4 Week 8 11. August 2004  13. St. 19. 54 (2007)  Marking 1005  Table 11 Marking 1006  Table 11 Marking 1007  Tab	
Remote session 5	Wesk SS TBC on an Individual Basis	
Weeks 18-20 TBC on an Individual Basis  Remote session 6		



# **S&C Trainer - What will I learn?**

# Foundation Movement Skills

- Squat
- Hinge
- Lunge
- Push/Pull
- Quadrupedal
- Rotations
- Running, Jumping and landing

# **Energy System Training**

 Training to improve aerobic and anaerobic endurance

# Strength Based Training

- Foundation Movement Competency
- Strength
- Muscular Endurance
- Hypertrophy
- Explosive movements

# **Speed Training**

- Accelerate
- Decelerate
- Change of Direction



# On completion you will be able to...

Knowledge and Skills	Application
Understanding the role of the S+C Trainer	Deliver appropriate 'performance led' s+c programmes across a diverse range of participants. Understanding when to refer.
Underpinning scientific basis of strength and conditioning	Apply the principles of training to deliver effective sessions
Effective training	Demonstrate, describe and coach effective movement, progressing/regressing where appropriate
Planning training programmes	Design and write medium term training plans based on a comprehensive needs analysis
Understanding technical models	Observe, Coach and feedback movement based agreed technical models
Effective coaching	Effectively engage, educate and communicate with participants across a wide background

# **S & C TRAINER CONTENT**

# **UKSCA**

# **S&C Trainer - the assessments**

Assessing: - Attendance - Adherence - Impact

- Action plan

Foundation movements coaching

> 20 mins 1 to 3

Coaching safety in the gym

> 20 mins 1 to 1

40 mins 1 to 1

Strength-

based training

coaching

Programming authentication assessment - 60 mins

Initial consultation

> Needs analysis

12 week programme & session plans

Assessment screens/tests

"Safe to deploy"

S.M.A.R.T. goal setting

Programme design presentation

Programme impact & reflective practice assessment - 60 mins

> Programme delivery min. 8 weeks

Reflective practice portfolio

Programme impact presentation

Min. week 6. Min week 6-8

Min week 8

Min week 10

Min week 18

APPLIED THEORY

PRACTICAL

# **S & C TRAINER SPECIFICS**



# Practical assessment A - Foundation movements assessment

Coach a 20 minute session to a small group (min. 3 participants), consisting of:

- Introduction plus RAMP warm-up = 8 minutes
- Coaching 3x prescribed movements plus session conclusion = 12 minutes
  - 1x running-based, 1x jump, 1x other

Foundation movements assessment syllabus				
Running-based	Jumps	Lunge patterns	Quadrupedal	
Heel-toe walk	Jump to full extension	Half kneeling split squat	Basic cat	
March	Jump and stick	Alternate linear lunge	Dynamic cat	
Skip	Counter movement jump	Lateral lunge	Pouncing cat	
Side/lateral shuffle	Horizontal progressions (2 to 2, 1 to	Rotating 135 lunge	Push-up plank	
Starts and stops	2, 2 to 1, 1 to opposite 1, 1 to 1 hop)	Reverse crossover lunge	Catwalk	
180 degree turn				
Squat patterns	Pushes	Rotations	Hinges	
Prisoner	Push-up	Hip rolls	Hands on knees	
Counterbalance	Modified push-up	Thoracic clams	A, T, W, Y positions	
Gorilla				

# **S & C TRAINER SPECIFICS**



# Practical assessment B - Coaching safety in the gym

- Barbell back squat setting safety bars
- Barbell back squat single person spot
- Barbell back squat failing safely
- Barbell push press failing safely
- Dumbbell bench press single person spot
- Rower energy systems session set up





# **S & C TRAINER SPECIFICS**



# **Practical assessment C – Strength-based training assessment**

Coach a 40 minute session to an individual:

- Introduction plus RAMP warm-up = 5 minutes
- Coaching 5x prescribed movements,
   1 from each category plus session
   conclusion = 35 minutes

St	Strength-based training assessment syllabus			
1	Lower body dominant, bilateral	Back squat Overhead squat Front squat Barbell deadlift (clean first pull)		
2	Lower body dominant, unilateral	Split squat Bulgarian split squat Barbell lunge Step up		
3	Pull	Suspension or inverted row Bent over row Pull-up		
4	Push or vertical press	Push-up Strict press from behind Landmine strict press (half- kneeling) Barbell push press from front		
5	Trunk & Medicine ball	Supine overhead throw Rotating throw Deadbug Superman Side Plank		

# **S & C TRAINER LESSON PLANS**



# D - Programming assessment - real-life participant







# **COLLECT & SUBMIT EVIDENCE:**

- Initial consultation
- Assessment screens/tests
- Needs analysis
- 12-week programme design

# **AUTHENTICATE WORK:**

- Programme design presentation
- Professional discussion

# **S & C TRAINER LESSON REVIEWS**



# E - Impact assessment - after min. 8 weeks of programme delivery









# **DELIVER & SUBMIT EVIDENCE:**

- Programme changes
- Reflective log
- Applied A&P and biomechanics

# **AUTHENTICATE WORK:**

- Impact presentation
- Professional discussion

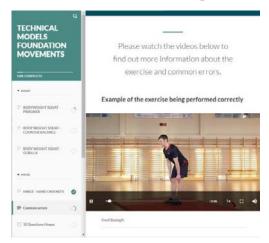
# **S & C TRAINER RESOURCES**



# **Supporting resources - core text and eLearning**



- Section 1 Understanding the role of the S&C trainer
- Section 2 The scientific basis of S&C
- Section 3 Effective training
- Section 4 Planning an effective S&C programme
- Section 5 Guidelines for designing specific S&C sessions
- Section 6 Technical models



# Complements the core text:

- Expert commentary on videos of all exercises
- Aims to improve coaching observation and correction skills
- Can be re-branded and developed further to meet your needs

# **Supporting resources – core text and eLearning**





UKSCA-IQ WORKSHOPS ASSESSMENTS CONFERENCE/EV

UKSCA-IQ MY UKSCA-IQ

PREMIUM

(2 chronnes)

(o episoues)

# S&C Trainer - Learner supporting materials



Foundation of S&C - S&C Trainer Core Text

(8 episodes)



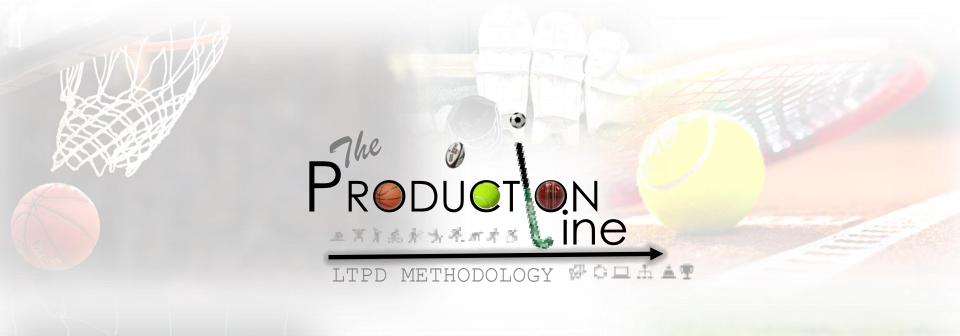
S&C Trainer - Technical model eResources

(2 episodes)



S&C Trainer - Anatomy, physiology and biomechanics sample quiz [15 questions]

Course Not Started PREMIUM



APPLYING THE PRINCIPLES OF

A STRUCTURED ATHLETIC DEVELOPMENT PROGRAM







# Elite Performance VALUES

HONESTY

ENTHUSIASM

RESPECT









COACHING **CULTURE** PREPARATION EDUCATION WELLBEING





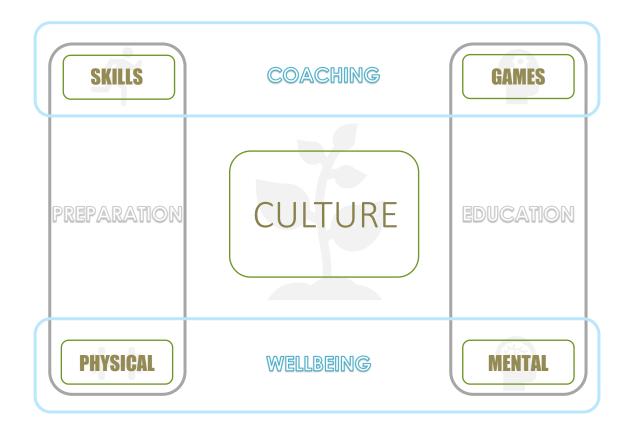








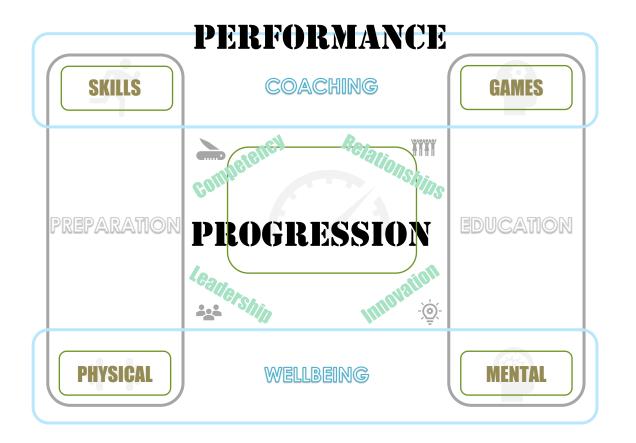






























# PEOPLE



GOOD Looks Like





# PLANNING





# PERFORMANCE MONITORING













































SAQ



Specific Skills Coaches

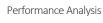
HELPING PEOPLE

WORK

**TOGETHER** 

Individual Coaching



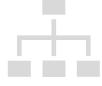


Coach Development

Sport Psychology Tournaments

**Training Camps** 

MENTAL







Nutrition

Lifestyle Education

Research & Development

READINESS



























UNDERSTANDIN









# **PERSON**

What skills should my S & C need to have?





# Laying the Foundations



Consider all aspects of how a person is working in their role and how this can be supported to be more effective for the organisation



Competency

Does the person have the required knowledge base, experience and skillset to effectively deliver their duties? Do they need further training, mentoring or resource around the workplace or department processes to improve their practise?



Relationships

Does the person understand their own behavioural preferences and educated enough to understand how others in their environment behave? Do they need further training, mentoring or a change of environment to improve their practise?



Leadership

Does the person display signs of guiding and supporting others in the workplace? Do they take ownership of specific tasks to display to others the desired actions and consequences? Do they need further training or mentoring opportunities to develop the desired attributes?



Innovation

Does the person look to refine and improve ways of working in either the daily routines, working environment, facilities, resources or people they work with? Does the member of staff require opportunities to explore improved ways of working in a particular area?



Values

Does the person actively display behaviours that align to the values of the organisaton? Can they show productivity in their role without non-productive consequences on others?



































# Remember we are still working with kids...

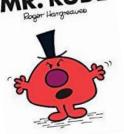




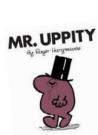


Which person are you sometimes?















# Laying the Foundations

All students can be encouraged through an LTAD blueprint to improve upon the following



1. Competency

Students will improve their physical competency and understanding of how the body works



2. Relationships

Through buddy system and small groupings within a larger group session, students will be encouraged to support and help each other develop



3. Leadership

At various timepoints in the sessions students will be exposed to scenarios which will improve their leadership skills if appropriate



4. Innovation

Not all delivery is autocratic in style, some parts of sessions will involve guided discovery and allow for students to express themselves and think of differing ways to move the body



5. Values

Key values will always be reinforced at the start and end of the sessions







## THE CHANGING FACE IN PERSONALITIES

# FOUNDATION: U9-U11

Firm but Fair + Smiley Face

**Use of Analogies** 

Over Positive Reinforcement + Muted Negative Identification



Listen & Understand Keep message simple but inform Positively identify negatives



# PROFESSIONAL PHASE: U18-U23

Set Standards + Cause and Effect regulations

Reminders about childhood

Be positive with individual support

Demonstrate personally if possible





# YOUTH DEVELOPMENT: U15-U17

Encourage weaker peers

Tackle egos – minimal sarcasm

Educate don't lecture







Continual development

Speed and change of direction

**Explosive Strength** 

Strength

Foundation Movements and exercise capacity

Further concurrent development of all qualities

Acceleration, deceleration and changing direction

Improve ability to produce force quickly

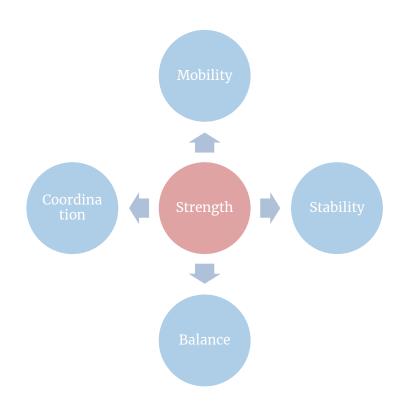
Increase and tolerate loads and energy system development

Development of foundation movement skills and general fitness













#### Running Based

- Heel-toe walk
- March
- Skip
- Side/lateral
- Starts and stops
- 180 degree turn



#### Hinge

- Hands on knees
- · A, T, W, Y positions



#### Pull

- · Hang/Hang plus
- Swings
- Pull Up
- Climbs









#### Push

- Push-up
- · Modified push-up

#### Squat

- Prisoner
- Counterbalance
- Gorilla

#### Quadrupedal

- Basic cat
- Dynamic cat
- Pouncing cat
- Push-up plank
- Catwalk





#### Jump

- Jump to full extension
- Jump and stick
- Counter movement jump
- Horizontal progressions



#### Rotation

- Hip rolls
- Thoracic clams



#### Lunge

- Half kneeling split squat
- Alternate linear
- Lateral lunge
- Rotating 135 lunge
- · Reverse crossover





#### Jump

- Jump to full extension
- Jump and stick
- Counter movement jump
- Horizontal progressions



#### Rotation

- Hip rolls
- Thoracic clams



#### Lunge

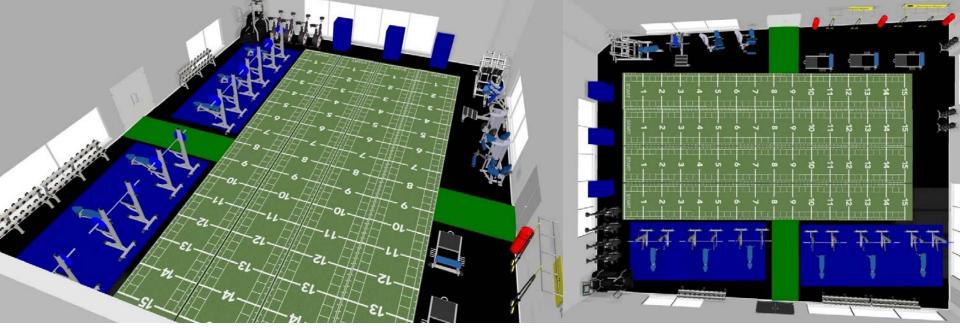
- Half kneeling split squat
- Alternate linear
- Lateral lunge
- Rotating 135 lunge
- · Reverse crossover

# 2<sup>nd</sup>

#### PLACE of usage

What equipment should my S & C Facility have?





### SIMPLISTIC - RECONFIGURABLE - MULTI-USE - DEFINED WORK AREAS SPACIOUS & SAFE

INDOOR USAGE = EVERY TYPE OF SESSION - ANY WEATHER - ANY TIME OF THE YEAR

COMBINATIONS OF REHAB & PHYSICAL / TECHNICAL & PHYSICAL





### nditioning **Quotations** 00 Strengt Equipment

#### Product: PB438 - 4 pairs(8 sets) of humper plates (Skg, 10kg, 15kg, 20kg, FB IIII 25kg) Company: 9 Perform Better Price 25 £2,050.00 Total Product: PB424A/B - 6x sets of technique discs (2.5kg and 5kg) Company: Perform Better Price £1,368,00 Total Product: PB426 - 8x Olympic barbells Company: Perform Better Price. £250.00 each Product: PB456E - 6x training bars (10kg) Company: Perform Better Price. £99.00 each Product: PB421-30x wooden dowels Company: Perform Better Price £7.10 each Product: PB469C-G- fix pairs of fractional plates (0.5kg, 1kg, 1.5kg, 2kg, 2.5kg) Company: Perform Better Price £1,535.00 Total

B	T
Product:	
PB4918- 1x set of dumbbells (2.5kg to 25kg) jog storage rack	
Company:	10
Perform Better	
Price	_
#1135.00	
£1135.00	
Product:	<u> </u>
PB461A- 6x 6ft hex bars	~
	× 5
Company:	
Perform Better	1
230	
Price	0.00%
£123.00 each	
Product:	0
PB725-2x prone row	
Company:	
Perform Better	
	The state of the s
Price	
£910,00 each	
Product:	
PB770 - 2x hip thruster	1
PB770 - 28 mp thruster	
Company:	-
Perform Better	. 7
Price	0
£660.00 each	
	-
Product:	T .
PB727A- 2x dipping bars	
Company:	
Perform Better	
PRIOR III SELLE	1 6
Price	1/\
£342.00 each	4-61
ESVA, DU MACH	4200
	W

	ning
	nditio
ations	CO
ent Quoto	gth 8
Equipme	Stren

Product:

Perform Better

PB253C-I - medicine balls-4-10kg & PB254H-I slam balls-12,15kg

#### Company: Perform Better Company: Perform Better. Price £328.00 Price. £325.00 per pair Product PB241 set of lifting blocks|4 blocks x 2 per pair) Product: PB214- 2x sets of glyg boxes Company: Company: Perform Better Perform Better. Price £550.00 per set. Price £1375.00 per pair Product: PB622 ski ergometers(wall mounted) PB642/PB627- 6x sets of boxing gloves & pads Company: Perform Better Company: Perform Better. Price-£456,00 Total Price £700.00 each Product: PB465 - 12x clips Product: PB1988. Magnetic I-pad Holders Company: Perform Better Company: Price Perform Better £6.15 per pair Price-Product: £145.00 each PB466C- 4x dipping belt Company: Perform Better Price PB728. 2x glute-ham developers (GHDs) £23.75 each Company: Product: Perform Better PB179A-1x long tape measure Company: Price £850.00 each

PB715 Portable squat racks

# 3rd PROCESSES

What should my S & C program look like?



#### LTAD PHILOSOPHY & PROGRAMME PHILOSOPHY Up to 3000 technical sessions & 1000 physical sessions between ages U9-U21 Right Training - Right Time / Doing the Basics Well Age Specific Training - Areas of Prioritisation Progressive / Regressive Structured Variation of Drills **Multiple Coaching Styles FOUNDATION PHASE** U9 to U11 - MOVEMENT SKILLS: Run-around with a smile on face / Want to please the coaches with good movement 2 x Athletic Development (15 mins) 1 x Multi-sport IPD (30 mins) 1 x Multi-sport Team (30 mins) Homework Task ILP LOWER YDP (Transition) U12 to U14 - PHYSICAL COMPETENCY: Master your Body / Learn the next stage of training without causing damage Learn to respect the assistance that can be provided 2 x SAQ Development (15 mins) 2 x Strength Education (20 mins) 1 x Multi-sport IPD (10 mins) 1 x Multi-sport Team (10 mins) Homework Task ILP **UPPER YDP (Exam Years)** U15 & U16 - STRENGTH ÉDUCATION: Start to learn about what is to come without trying to be the next U18 Time can not be fast forwarded 2 x SAQ Development (15 mins) 2 x Strength Education (30 mins) 1 x Multi-sport ILP(15 mins) 1 x Multi-sport Team (15 mins) PDP (6th Form to Uni) U18 to U21's - DISCIPLINE and ATTITUDE: To Work on the fine details to see the results of the bigger picture Don't try to be a Pro, Earn the right to be a Pro

4 x SAQ Development (15 mins) 3 x Strength Development (30 mins)

2 x ILP (15 mins)

#### LTAD EVALUATION & REVIEW

#### ASSESSMENT

Strength Diagnostics – Iso Peak Force, MTP & Norbord (%BW) / L+R imbalance Predicted 1RM – Squat, Deadlift, Bench, Prone Row (%BW) RSI – Double-leg, L+R imbalance Sprint Tests CoD Tests

#### **ANALYSIS**

Traffic Light Physical Performance Testing Benchmarking System Simplifies Process Age Specific Chronological Bandings based upon normative data U9-U10, U11-U12, U13-U14, U15-U16, U17-U19 ....

1 2 3 4 5
Poor Below Av. Average Good Excellent

#### **REVIEW**

Individual Player Reviews / Long Term Individual Summaries Squad Summaries / Long Term Squad Summary KPI %'s Tables

Individual Terms Mid-Year / End of Year

#### REFLECTION

Departmental KPI Plan

Bi-annual SWOT

Individual staff KPI Appraisals

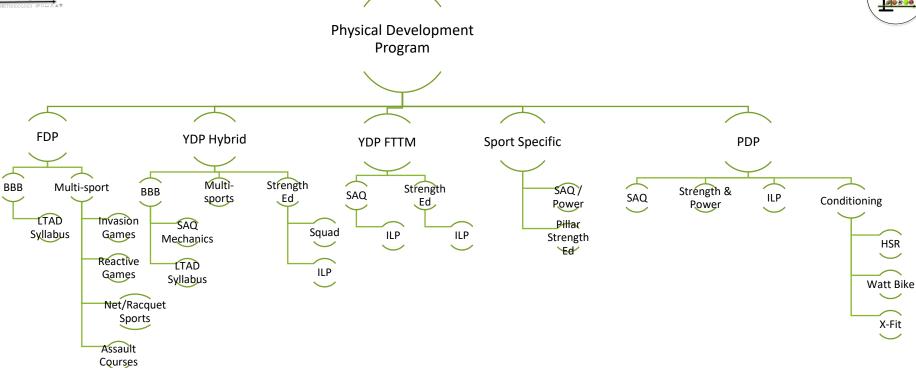




A Structure of Gym & Field Based Conditioning Based upon Long Term Athletic Development Phases PHASE **FUNdamentals** 5-8 years Key Stage 1&2 Teachers, Multi-sports Physical Competency Coaches arning to Move Key Stage 2 Teachers, Grass Roots Teams Coaches Learning to Train 12-14 years Key Stage 3 Teachers, Grass Roots Teams Coaches, Gifted & Talented Scheme S & C Coach **Training to Train** 15-17 years Key Stage 4&5 Teachers, TASS S & C Coaches, Sports Clubs Technical Coaches Training to Compete 17+ years Key Stage 5 Teachers, FE/HE Lecturers, Professional Sports S & C Coaches













#### R.A.M.P Warm Up

#### Raise

- ·Increase HR
- Increase temperature
- ·Increase Blood Flow
- •Joint fluid viscosity
- •AROUSAL

#### Activate

- Activate key muscles and joints
- ·Skill rehearse
- Session or development specific

#### Mobilise

- •Develop Range of Movement
- •Mobilise key joints
- •Develop mobility through multiple planes

#### **Potentiate**

- Progressive increase in intensity
- Specificity
- Physical/mental preparation for skill/physiological outcome



#### Structuring a Warm Up

#### Raise

#### Running Skills: Walk/Jog/March Run/Shuffle

Skip/leap/hop/turn

**Quadrupedal:** Cat Walk

#### **Activate and Mobilise**

#### Running skills: Heeltoe walk

**Squat:** Prisoner squat, counter-balance squat, gorilla squat

Hinge: Hinge A, hand on knees, Hinge T, W, Y Lunge: ½ kneeling spit

squat, Alt lunge, lateral lunge, rotating (1350

lunge), reverse crossover lunge

Jumps: Jump position

to full extension

**Quadrupedal:** Basic cat, dynamic cat, pouncing cat, push up plank,

cat walk

Rotations: Hip rolls, thoracic clams Push: Push up, modified push ups Pull: Hang, hang plus, monkey bar, rope pulls, pull ups

#### Potentiate

#### Jumps:

Jump and stick, Counter movement jump (CMJ) Leaps Hops

**Running skills:** Split stance start

Bilateral stop Split stance stop

180 turn.

Structured

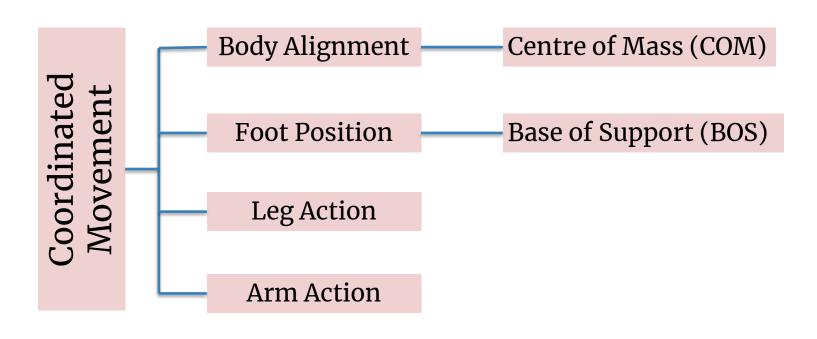
Progressive

Developmental

**Specific** 



### Running-based movement mechanics







#### TRAINING CATEGORIES



On-line Library Resource for Student Education for specific phase







ILP Program Recommendations: Strength, Power, Speed, Agility, Multi-sport





















#### STRENGTH TRAINING

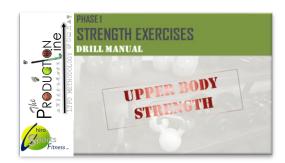


**ILP Program** Recommendations:. Strength Exercises to improve:

- ✓ Posture
- ✓ Balance
- ✓ Mobility



























#### LOWER BODY





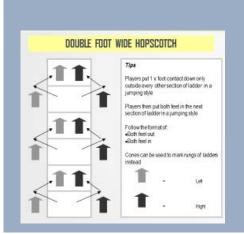






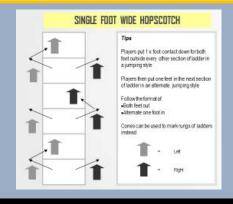


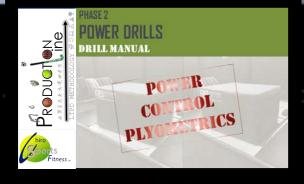
#### LOWER BODY POWER CONTROL

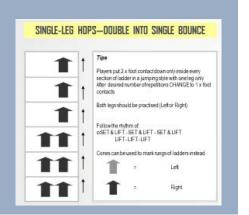




3-5 reps per drill









Each side IF a single-leg drill



















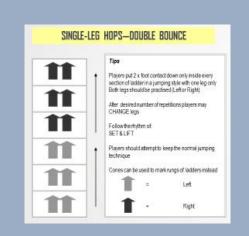




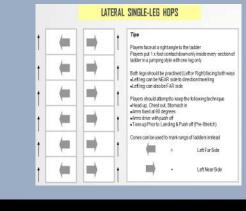


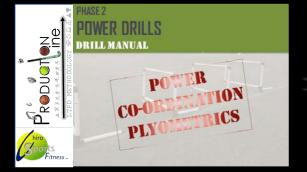


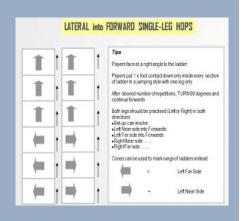
#### LOWER BODY POWER CO-ORDINATION



2-4 reps per drill









Each side IF a single-leg drill





























#### DRILL MANUAL

#### STRENGTH EXERCISES

LOWER BODY STRENGTH

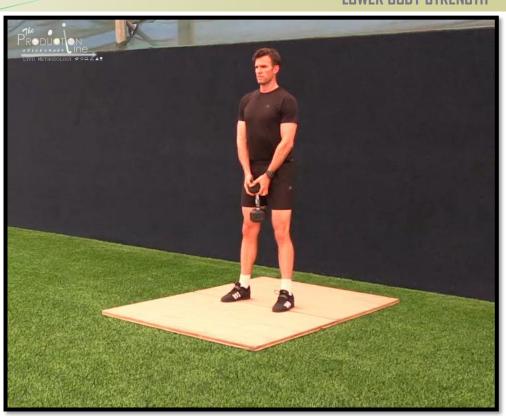
#### SINGLE DB ROMANIAN SUMO DEADLIFT





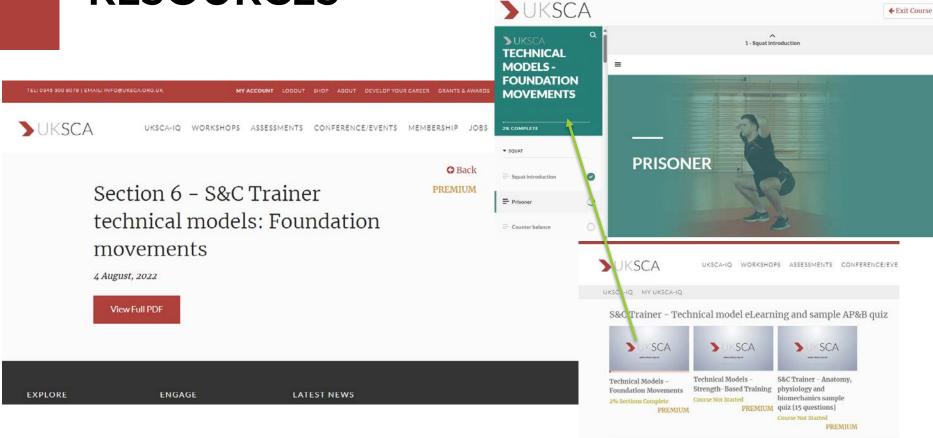
#### **Key Points**

- Keep Head NEUTRAL, Chest UP
- Back FLAT, Stomach IN
- Start movement with Hips BACK
- Knees slightly bent but FIXED
- Arms STRAIGHT, LOOSE Grip on DB
- Breath IN and SLIDE DB down between thighs



#### **RESOURCES**









#### STRENGTH-BASED TRAINING

#### 0% COMPLETE

▼ BILATERAL SQUAT

111

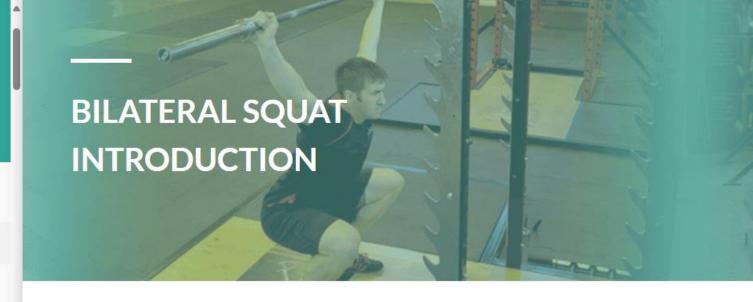
Overhead squat

Bilateral squat introduction

■ Back squat

= Front squat

▼ BILATERAL HINGE PULLS



The back squat, overhead squat and front squat collectively challenge the mobility of all key joints in the kinetic chain whilst developing strength and mobility in the lower body, the thoracic spine and improving shoulder stability. Bilateral squats are foundation exercises for any performance-orientated training





#### DRILL MANUAL

#### STRENGTH EXERCISES

LOWER BODY STRENGTH

### PHASE 3

#### MED-BALL SINGLE LEG ROMANIAN DEADLIFT



#### **Key Points**

- Keep Head NEUTRAL, Chest UP,
- Back FLAT, Stomach IN
- Start movement with Hips BACK
- Knees slightly bent but FIXED
- Arms STRAIGHT, LOOSE Grip on MB
- Breath IN and hold MB in desired position

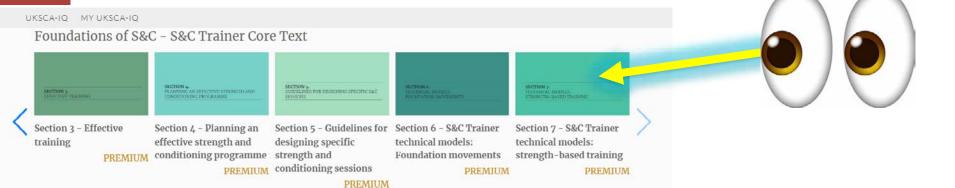
#### MB POSITION OPTIONS:

- Lv 1 Sumo Position
- Lv 2 At Chest
- Lv 3 Out in Front
- Lv 4 Out to Side
- Lv 5 Above Head
- Lv 6 Different combos



### STRENGTH BASED TRAINING





7.3 Unilateral (lower body dominant)	
7.3.1 Split squat	278
7.3.2 Bulgarian split squat	281
7.3.3 Barbell lunge	284
<b>7.3.4</b> Step-up	287



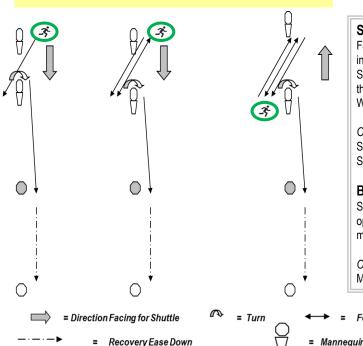


#### DRILL MANUAL

#### **REACTION SPEED**

MANNEQUINN SPEED DRILLS

#### DOUBLE MANNEQUIN DIAGONAL STARTS



#### Single Diagonal Footwork Sprint

Facing forwards – getting in front of the second mannequin in a side on position

Shuffle back behind the mannequin and then accelerate through to half-way point

Walk back to start

#### Options

Same routine as above but with 2 shuttles prior to sprint Same routine as above but with 3 shuttles prior to sprint

#### **Backwards Footwork Sprint**

Same format but footwork shuttle is performed in an opposing direction prior to turn and sprint through half-way marker

#### Options

Multiple number of mini shuttles prior to sprint

Footwork Shuttle

= Acceleration Sprint



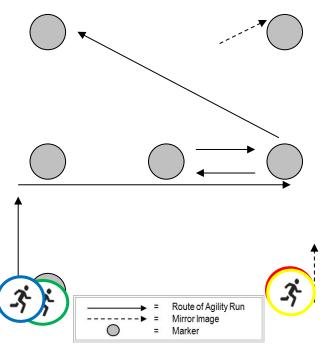


#### DRILL MANUAL

CoD SPEED

DOMINO AGILITY DRILLS

#### DOMINO - UP, ACROSS, IN, OUT & DIAGONAL









#### TECHNICAL MODELS -FOUNDATION MOVEMENTS

37% COMPLETE

= Hip rolls

Thoracic clams

▼ RUNNING DEVELOPMENT

Running introduction

Heel-toe walk

High knee walk

High knee skip/run

(

0

0

= Side shuffle

Split stance start



Correct running technique is important for all general movement and balance. Acceleration should be developed before progressing into top speed running. General technical learning is gained through running development exercises but they also provide effective warm-up activities.

#### Running technical model

#### MANY THANKS

#### LOOK FORWARD TO HEARING FROM YOU



#### FOR MORE INFO CONTACT



kevin.paxton@chirosportsfitness.co.uk



+44 (0)7835 936693





FACEBOOK - INSTAGRAM

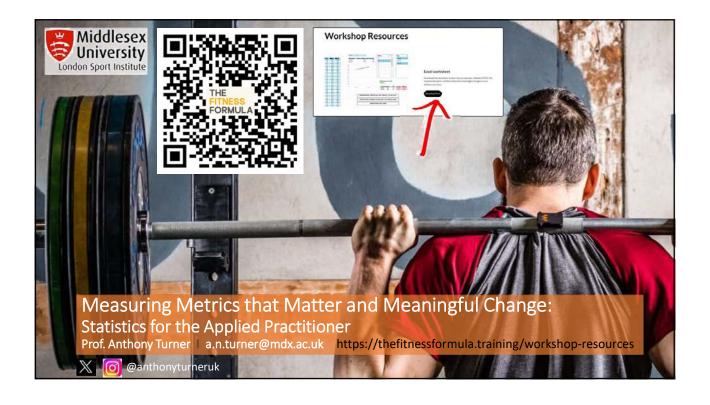


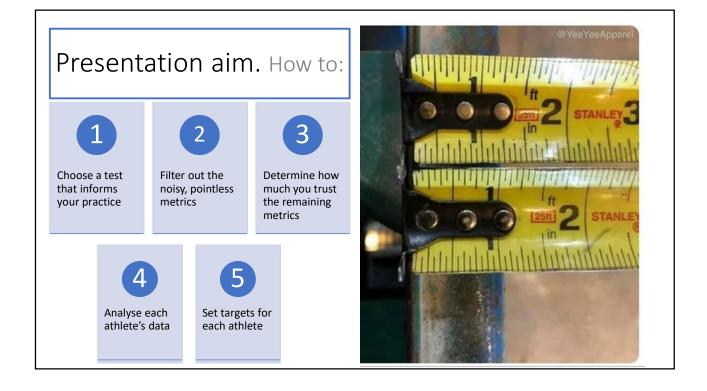




## Data Analysis for Strength and Conditioning Coaches: Tracking Meaningful Change

**Dr Anthony Turner**Professor of Strength and Conditioning, Middlesex University





### Step 1. Choosing a test ...that informs your practice

#### Identifying what to test and train through a needs analysis

Coach's Physical KPI's	Cover lots of distance	Be fast	Be agile	Multiple sprints	Win aerial challenges	Win tackles (protect ball)	Be robust
Physical quality	Aerobic capacity	Speed & acceleration	CoDS	RSA	Power	Strength	Symmetry & ROM
Test	MAS	10 m & 30 m, RSI	Pro-agility (inc. decel)	30 m x 6, 20 s rest	CMJ (inc. Loaded jumps	IMTP	OHS & Nordboard
Exercises	HIIT, SIT, SSG	SPD and Accel drills, plyometrics	Deccel and agility	HIIT, SIT, SSG	Power training (ballistics)	Strength training (squats)	Hams, adductors, glutes, eccentrics, unilateral

#### **Choosing a test**

#### **Biological Basis**

- Is there a justifiable link between the metric of interest and athletic performance?
- Does a theoretical cause and effect relationship exist?

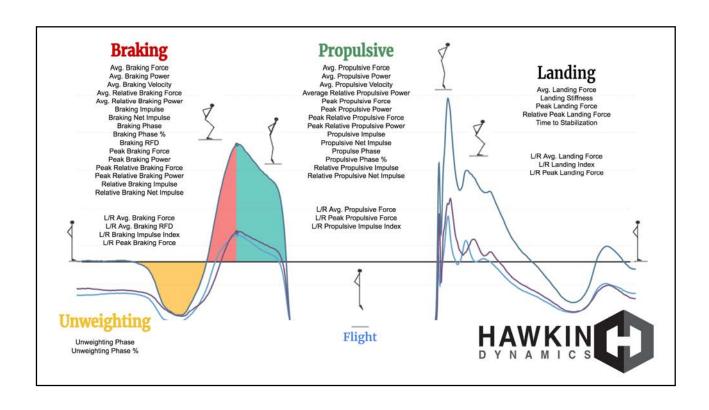
#### Feasibility

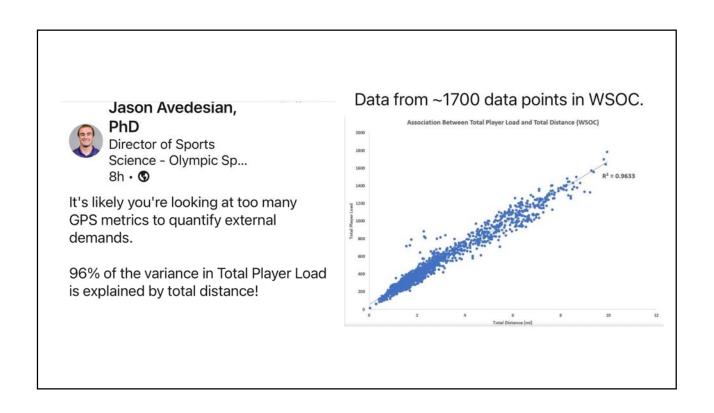
- Logistics surrounding its implementation including: cost, time and staffing.
- How long does it take to produce a report for coaches?
- · Is the right culture in place?

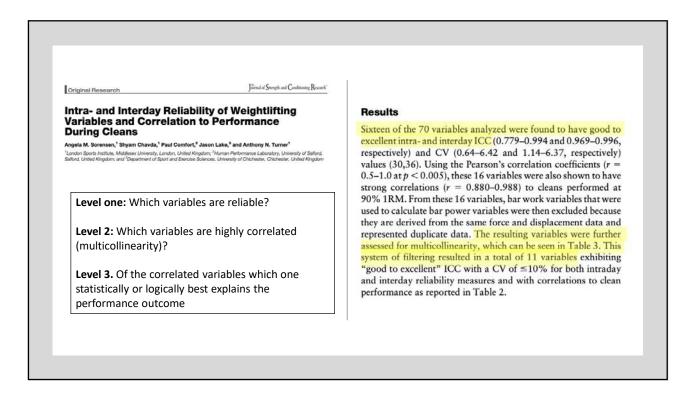
#### Sensitivity

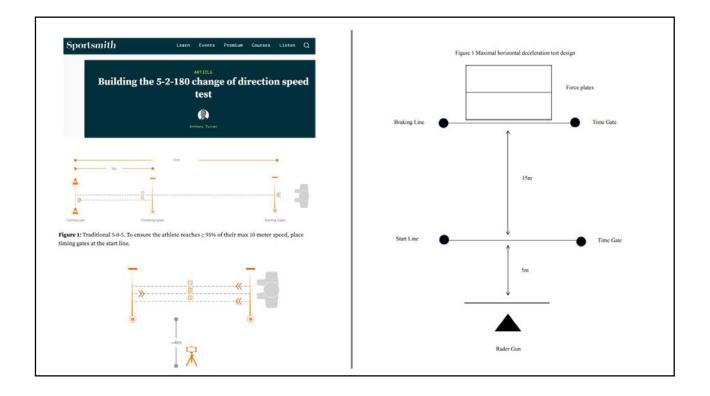
- To what accuracy can it detect true changes?
- Realistically, can you actually inform practice off the back of this measure?











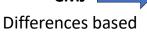


#### Drop Jump

Differences in between-trial drop heights

CMJ

on cues







If you start with the wrong metric, or a valid yet noisy one, there is no form of analysis that can save you from rubbish data and meaningless inferences.

# Step 3. Is the metric reliable ...How much should I trust it?

#### Explain this to your athlete

#### You bench press 3 times in a week

- In session 1 you bench 70 kg
- In session 2 you bench 72 kg
- In session 3 you bench 69 kg

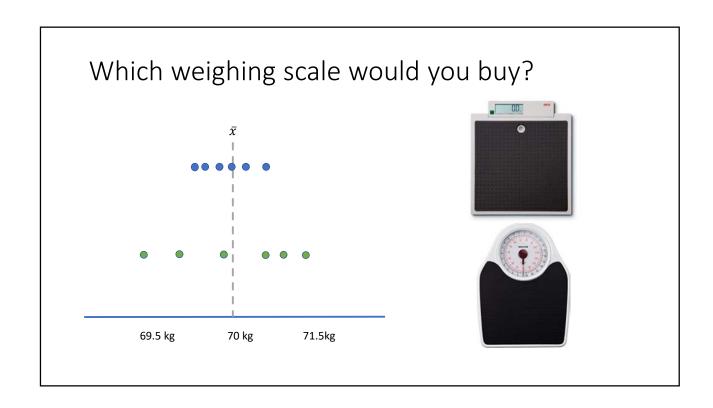


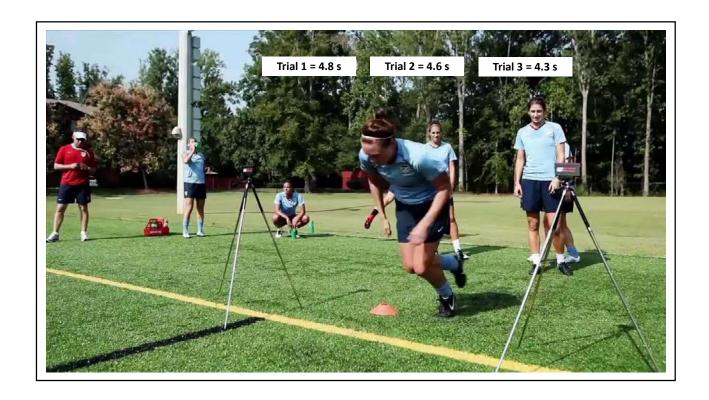
#### What about this...

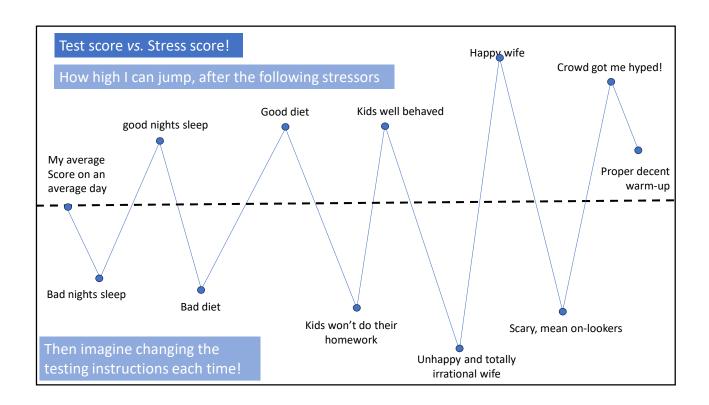
You weigh yourself everyday for 5 days

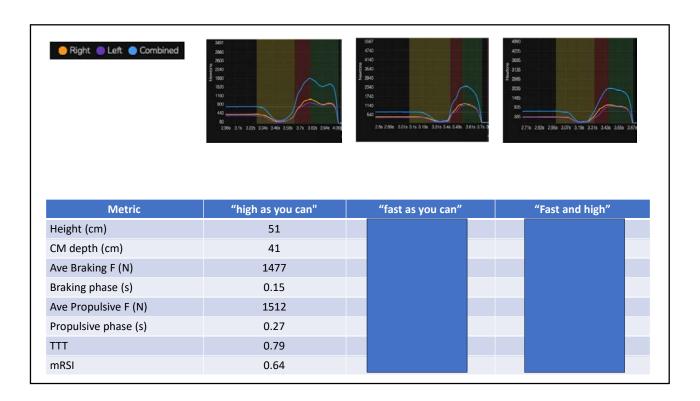
- On day 1 you weigh 70 kg
- On day 2 you weigh 70.5 kg
- On day 3 you weigh 69.9 kg
- On day 4 you weigh 70.1
- On day 5 you weigh 70.3











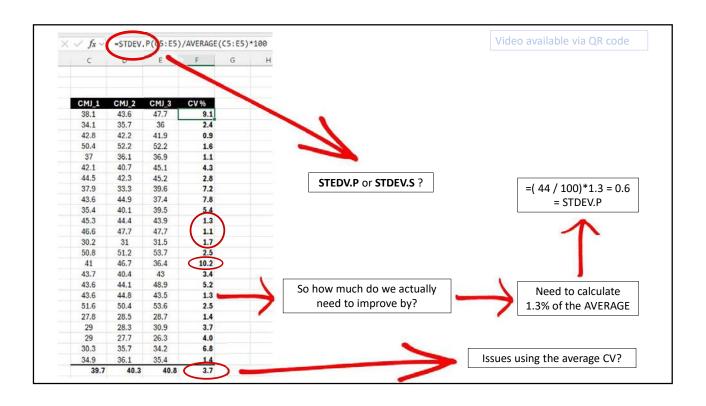
### Coefficient of variability (CV)

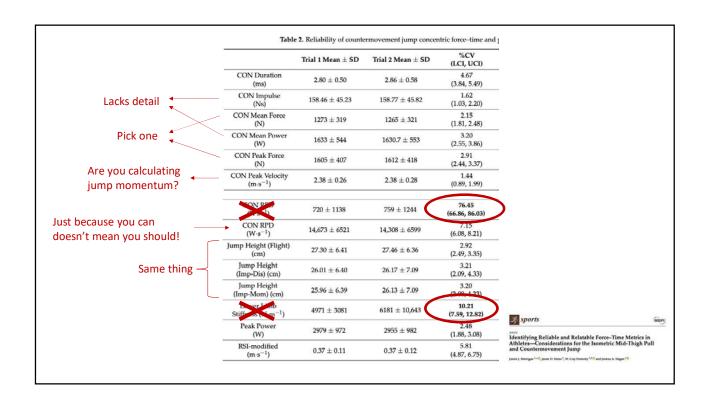
CV % = (SD/mean) \*100

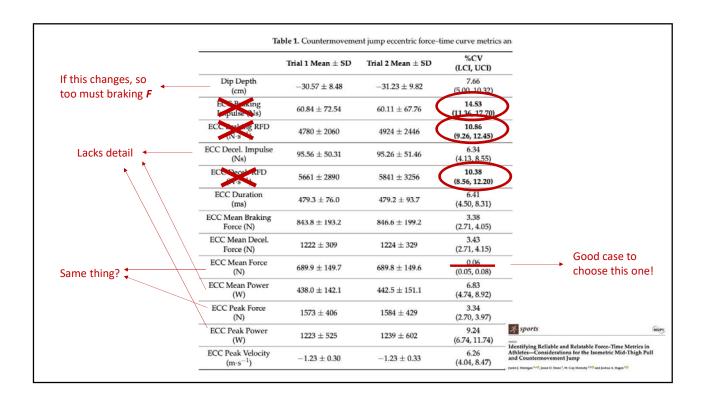
- CV of 10% suggests that the SD is 10% of the mean. The higher the CV, the less consistent the data points
- CV best measure of reliability if comparing tests with different units
- E.g., which is more reliable, jump height system with an SD of **3 cm**, or peak force system with an SD of **100 N**?
- Mean score = 40 cm and 2000 N respectively. Therefore:

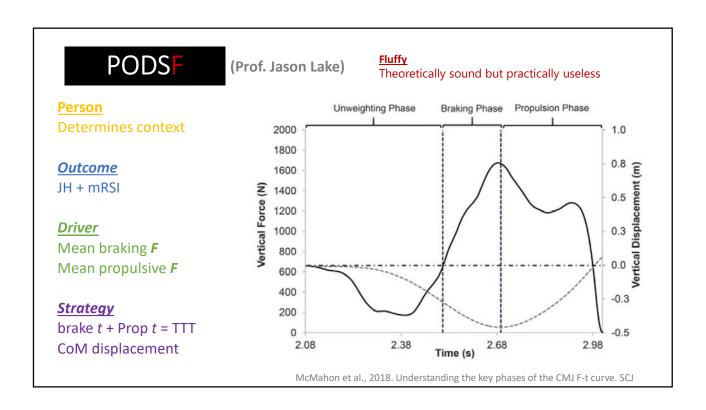
Jump height system

Peak force system

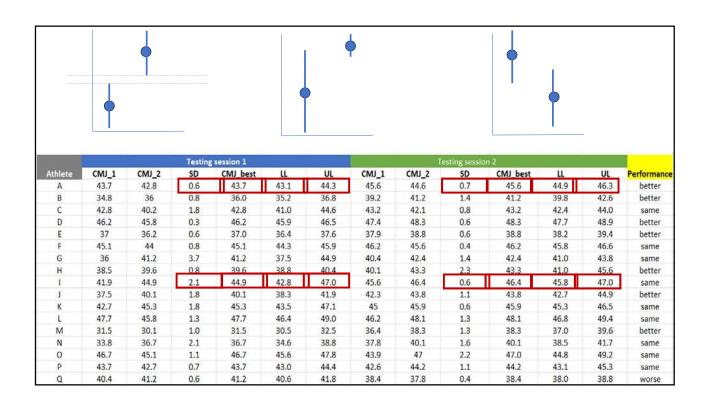


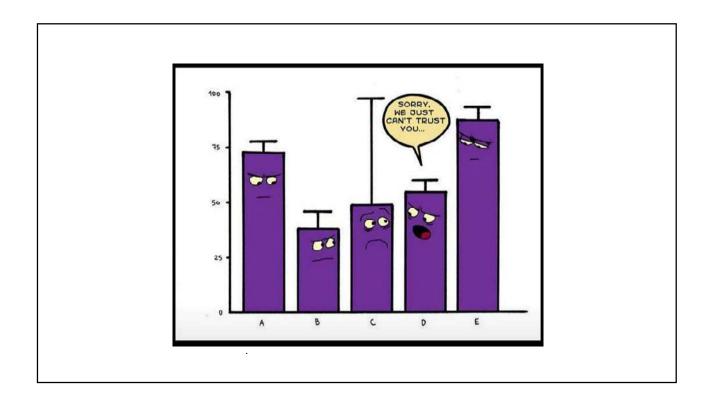


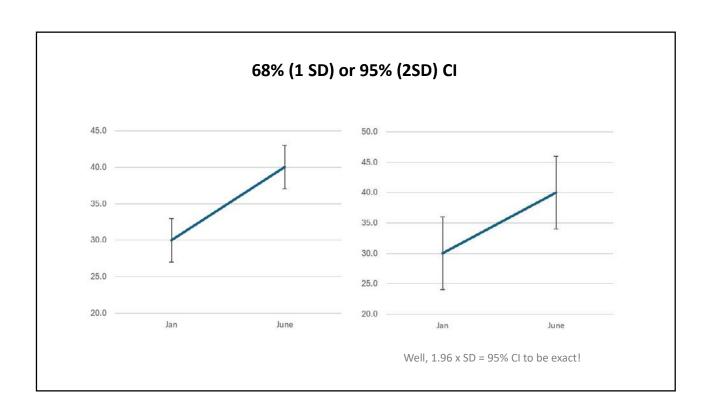


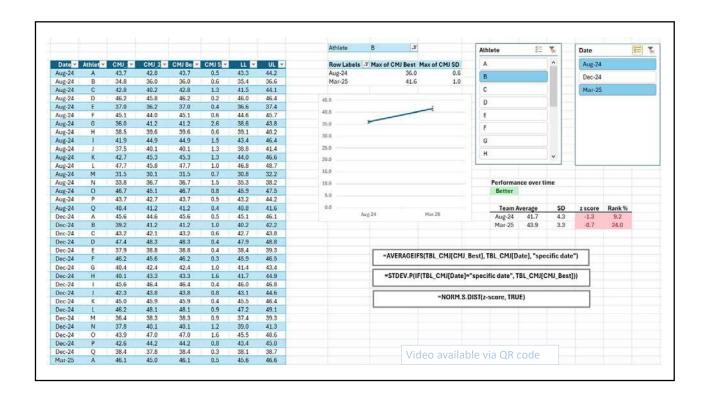


# Step 4. Individual athlete analysis ...determining meaningful change



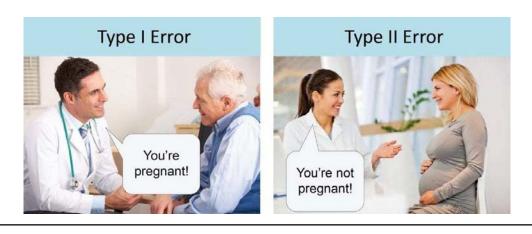






#### Type I or Type II error? That is the question

- A Type I error is a false-positive you claim a difference when there is none
- Type II error is a false-negative you claim no difference when there was one



#### Club philosophy: Risk vs. Reward

- Do you prefer to play it safe or be sensitive to smaller changes?
   Perhaps a philosophical question.
- There is no right or wrong answer.
   Sometimes you'll be right,
   sometimes you'll be wrong.
- Therefore, need to focus on the consequences of each scenario to help you choose.





the The Color Color and Young to September 1997. The Color Color and Young to September 1997, the Color Color and Young to September 1997. The Color and Young to September 1997, the Color and Young to September 1997. The Color and Young to September 1997, the Color and Young to September 1997, the Color and Young to September 1997. The Color and Young to September 1997, the Color and Young to September 1997, the Color and Young to September 1997. The Color and Young to September 1997, the Color and Young to September 1997, the Color and Young to September 1997. The Color and Young to September 1997, the Color and Young to September 19

### Reducing the noise (SD)

#### The tester

- Expert
- Strict
- Coaching cues

Post CMJ – Pre CMJ Variability

#### The environment

- Temperature
- Audience
- competition
- Music



#### The athlete:

- Homogenous group
- Technique
- Motivation
- Biological variability

#### The equipment

- Recording frequency
- Calibration
- Unobtrusive

# Step 5. Comparison with teammates ...to set realistic targets

z scores and the TSA



#### Total Score of Athleticism: Holistic Athlete Profiling to Enhance Decision-Making

Arthory N. Tumor, P10.1 Ban Janes, P10.1 Parry Stewart, MSc.<sup>1</sup> Chris Biohep, MSc.<sup>1</sup> Nimal Piernar, P10.1 Bhysin Churda, MSc.<sup>1</sup> and Plau Hiad. P10.1 "Coolin Sports shatch, Modiseus University, Allianz Park, London, United Kingdons," Cannigin Applied Ringly Research (CARR) Certine, Installe for Sport, Physical Activity and Lobuse, Leeds Backett University, Loeds, United Kingdon, "Primare Performance and Persecut" Team, American Forthal Clan. University Registers, and "Agentical Canada Canada (Canada Canada Ca

#### ABSTRACT

Othermore, the current counting staff, agent instinct, and redding partial counts instinct, and redding partial counts instinct, and redding partial counts of the country of the country

A strength and conditioning couches, we restrictly part our affects through a variety of feness assuments to determine their Address correspondence to Dr. Anthony N.

ried capables, so that we can convenient to the design of their training time available for planning and a fear one of alays accordingly tarly, the previousless, physical technical coacina also so the address with the results on the address with the results.

concerned in the raw score of each subtlete, as much as where the sever staked among their teamstates, around a second their teamstates, and the second second their teamstates are subtleted as the second as the what is decreased a second part height or buck, squark with this information andy subtleted are subtleted as the second as the second team of the second as the second analysis that reveals the second is unusually the highest or bronce in the second as t

statistics; precise; fixed; data analysis;

Converted C National Strength and Conditioning Association
Converted C National Strength and Conditioning Association

Storyth and Conditioning Secret 1 www.teia-sci.com attent. Unsufficenced reproduction of this article is a



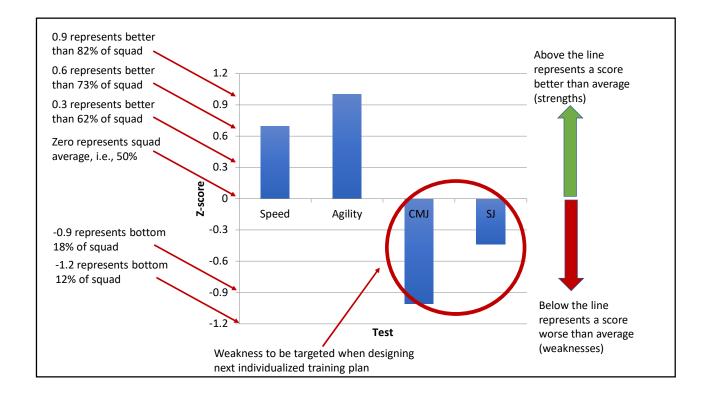


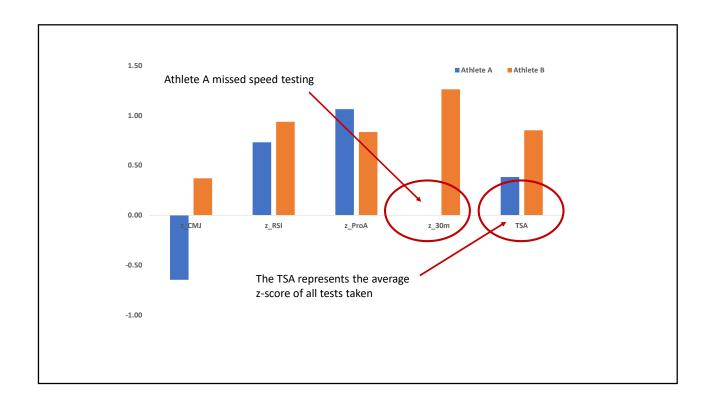
Is that score any good and which test did they do best on? • But maybe the team is fit Back Squat: Shuttle Test: and they all scored well on 140 kg Level 15 the shuttle test... • Level 15 may have been one 64% 88% of the lowest • Conversely, there may only Best Best be a few strong athletes, so Back Squat: Shuttle Test: 140kg is really good! 220 kg Level 17

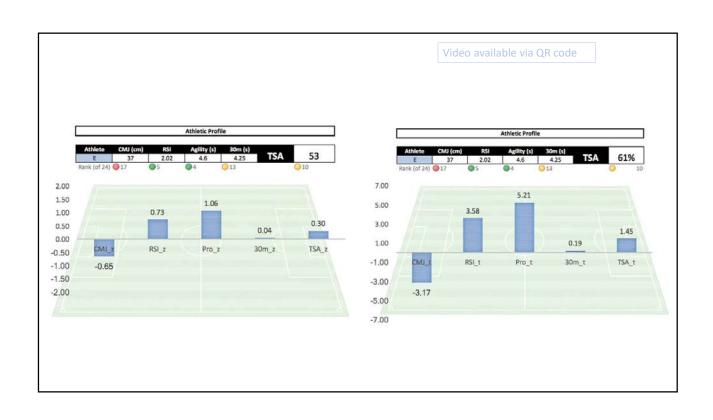
#### Turn test scores into a z-scores

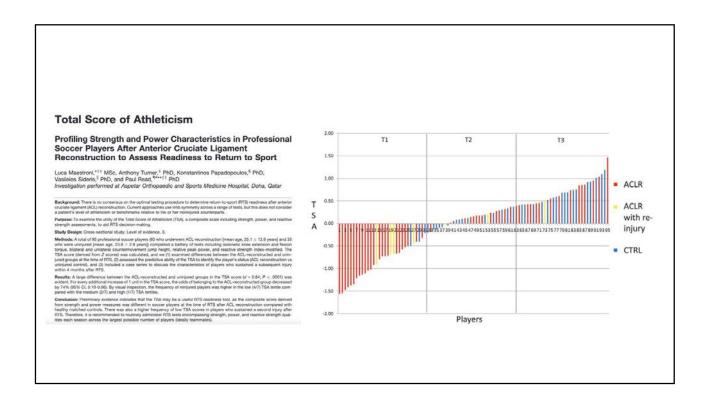
- Z-scores tell you how many SD's a score is from the mean
- If a z-score = 0, it is identical to the mean score
- If a z-score = 1, it is 1 SD above the mean
- If a z-score = -1, it is 1 SD below the mean

	S		T	U	V	AE	AF	AG	AH	Al	AJ	
1	Best_CMJ	Best	RSI	Best_ProA	Best_30m	z_CMJ	z_RSI	z_ProA	z_30m	TSA	Rank	
2	47.7	[	1.6	5	4.5	S\$27	-0.23	0.15	-1.49	-0.23	0	18
3	36		1.63	4.9	4.46	-0.77	-0.16	0.38	-1.25	-0.45	0	19
4	42.8		1.72	6.4	4.19	0.06	0.05	-3.06	0.41	-0.64	0	20
5	52.2		2.5	4.4	4.34	1.21	1.83	1.52	-0.51	1.01	0	2
6	37		2.02	4.6	4.25	-0.65	0.73	1.06	0.04	0.30	0	10
7	45.1		1.81	4.8	4.16	0.34	0.25	0.60	0.59	0.45	0	7
26	42.29	Ī	1.70	5.1	4.26							
27	8.16	Ī	0.44	0.44	0.16							











# Technology to Support Strength and Conditioning Output Sports



National Conference for Leaders of Strength and Conditioning in School

# Technology To Support Strength & Conditioning

Damien Mckeown
Padraig Cullen

outputsports.com

# OUTPUT//

### What we'll cover

- Why athlete intent matters
- Strategies for designing high engagement sessions
- Case-studies
  - Millfield x Output
  - CBS Monkstown x Output
- Live demo: Intent in action



outputsports.com



As S&C coaches what would it be like to achieve practical real time feedback, while promoting a competitive environment improving intent by 9%?

## OUTPUT//

Most coaches say that training lacks real-time intent measurement, thus turning workouts into exercise without meaning.

We work with coaches from Millfield to the All Blacks, who face the same challenge, motivating athletes in the gym.

Without instant feedback, it's hard to drive purpose, effort, or improvement when it matters most.

outputsports.com

### Why "Intent" Matters

- Intent drives physical, technical, and tactical improvement
- Intent > volume: Maximise benefit of training in time-constrained elite sports environments
- Athlete buy in, engagement + enjoyment!
- Maintaining/peaking an athletic quality in competition periods
- Priming/Neuromuscular stimulus



### **Using Competition to Drive Intent**



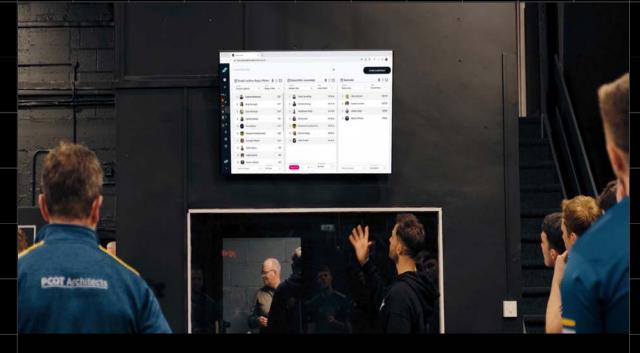
Framework thanks to Dr. Ben Rosenblatt, 292 Performance

### Intervention

Live Leaderboards: Live Leaderboards create an instant, Gamified & transparent way for athletes to track their performance in real time alongside their peers.

#### Why?

- Creates Friendly Competition
- Provides Immediate Feedback
- Ignites Drive to improve
- Increase engagement Every Effort Counts
- Exciting, Goal Oriented Challenges







### Intervention

Velocity Based Training: Method of Strength Training that uses the speed of movement.

### Why?

- -Guide load selection
- -Monitor performance
- -Optimize training outcomes.

Instead of just using percentages of one-rep max, VBT helps adjust loads in real time based on how fast an athlete is lifting, ensuring the right stimulus every session.





## Why Leaderboards Work?



### Why technology matters

**Monitoring & Assessment** 

**Injury Prevention & Safety** 

**Program Design & Individualization** 

**Education & Engagement** 

**Communication & Collaboration** 



### Millfield Case Study

- 600 students per week x 67 squad sessions
- Time constraints: 40 mins per \$&C session
- Main goals: Make each student more powerful over the year
- Metrics: Jumps, VBT and RSI. Tracking power progression
- Drive intent, while making training fun!





### Case Study: CBC Monkstown

- Capture App + V2 Sensor Measures and drives intent for Barbell + Medball VBT work Seamlessly.
- Allows for LTAD Testing for Jumps and RSI Scores.
- Output Hub allows for Charting and visualisation of data.
- Ability to track and present Data on individuals and Teams/groups to Parents, other Coaches or Directors creating a Performance Passport from First Day to Last.





### Case Study: CBC Monkstown



### Data driven analysis

Wearable technology led to a 40 % increase in workout efficiency and 20 % faster recovery overall

 79 % of athletes report that real-time tracking data directly influences their training decisions, effectively aligning effort with intent

The Rise of Wearable Tech in Sports Performance - Valeriu Crudu & MoldStud Research Team - 2024



### Trusted by the best

"The Report Generation On The Hub Has Been Key In Being Able To Show A Student And Their Parents The Progress They Have Been Making."

\_Phil Greenaway\_

Former Director of Sport

Dulwich College



### Trusted by the best

"Output have created a user-friendly, Valid and reliable Tool that can be used by any health and performance coach to assess a range of attributes. Because of the ease of use and simplicity more time can be spent converting such data into intelligence for both coach and athlete."

Nic Gill

Head of Strength & Conditioning

All Blacks Rugby



### Intent Drives Output

- Real-time biofeedback and leaderboards can maximise desired exercise stimulus, adaptation & Athlete Engagement.
- Providing Students with a new focus and drive, give you the coach more tools to create a new culture around S&C.
- Use tech to drive intent with purpose: don't dilute the effect, Keep the main thing the main thing!
- Data from intent-based sessions can also be used for readiness and Long term Athletic Development.
- Keeping it simple for maximum effect



### Live Demo of driving intent You are the Athlete!

## Ready to Bring Simple & Scalable Sports Science to Your School?

Sign your School up for a free trial today!

Let's chat and explore how Output Sports can elevate your PE and S&C programs.



outputsports.com

### **Maturation:**

**Assessment, Interpretation and Action** 

**Des Ryan** 

Maturation:
Assessment,
Interpretation
and Action.

Des Ryan.

17/6/25



University of Galway.ie





#### **Qualifications**

BSc - Sports Science MSc - Strength & Conditioning BASES (High Performance Sports Accredited) Chartered Scientist **UKSCA** Accredited World Rugby - Educator & Trainer (Level 1 & 2 S&C) IRFU - Tutor (IRFU CCC)

IAWA - Level 1 & 2











































### **University of Galway**

Director of Sport & Physical Wellbeing 2024-Present



### Ireland / Ireland A

2005-2008

### Irish Rugby

Fitness Education Manager 2008-2013

### World Rugby

Strength & Conditioning Advisor 2008-Present

### India Cricket (National Cricket Academy)

Assess & Educate Academy S&C Coaches 2019 - 2023

### **Arsenal FC**

Head of Sports Medicine & Athletic Development (Academy) 2013-2021

### **Setanta College**

Director of Coaching & Athletic Development 2021-2024

#### **Gaelic Games**

Sports Science Working Group / Coaching Advisory Group 2021 - 2024

### Accreditations



































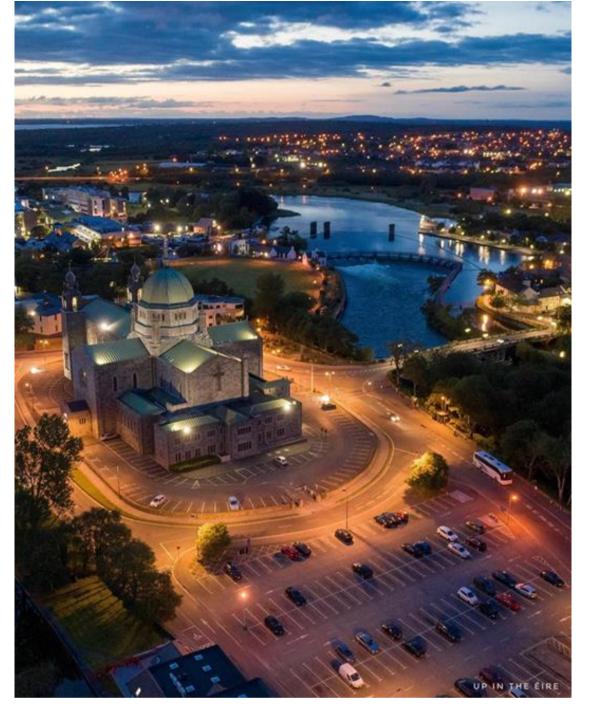




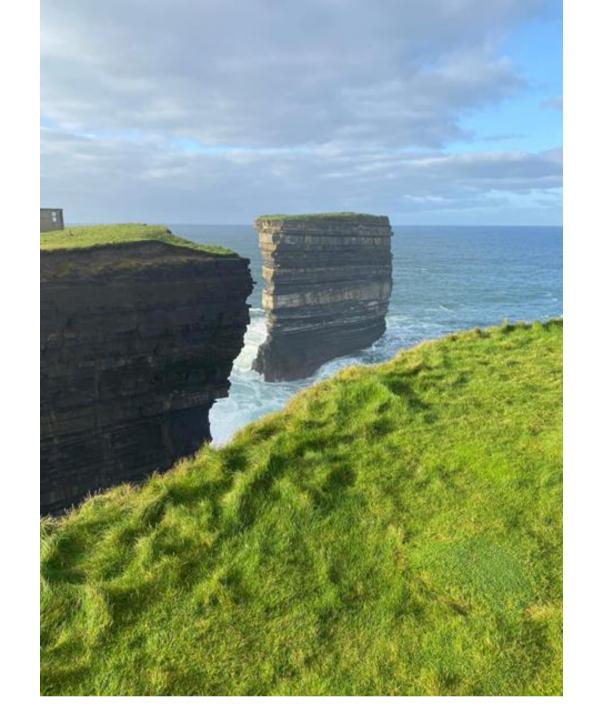
















## New Project – Director of Sport & Physical Wellbeing. University of Galway







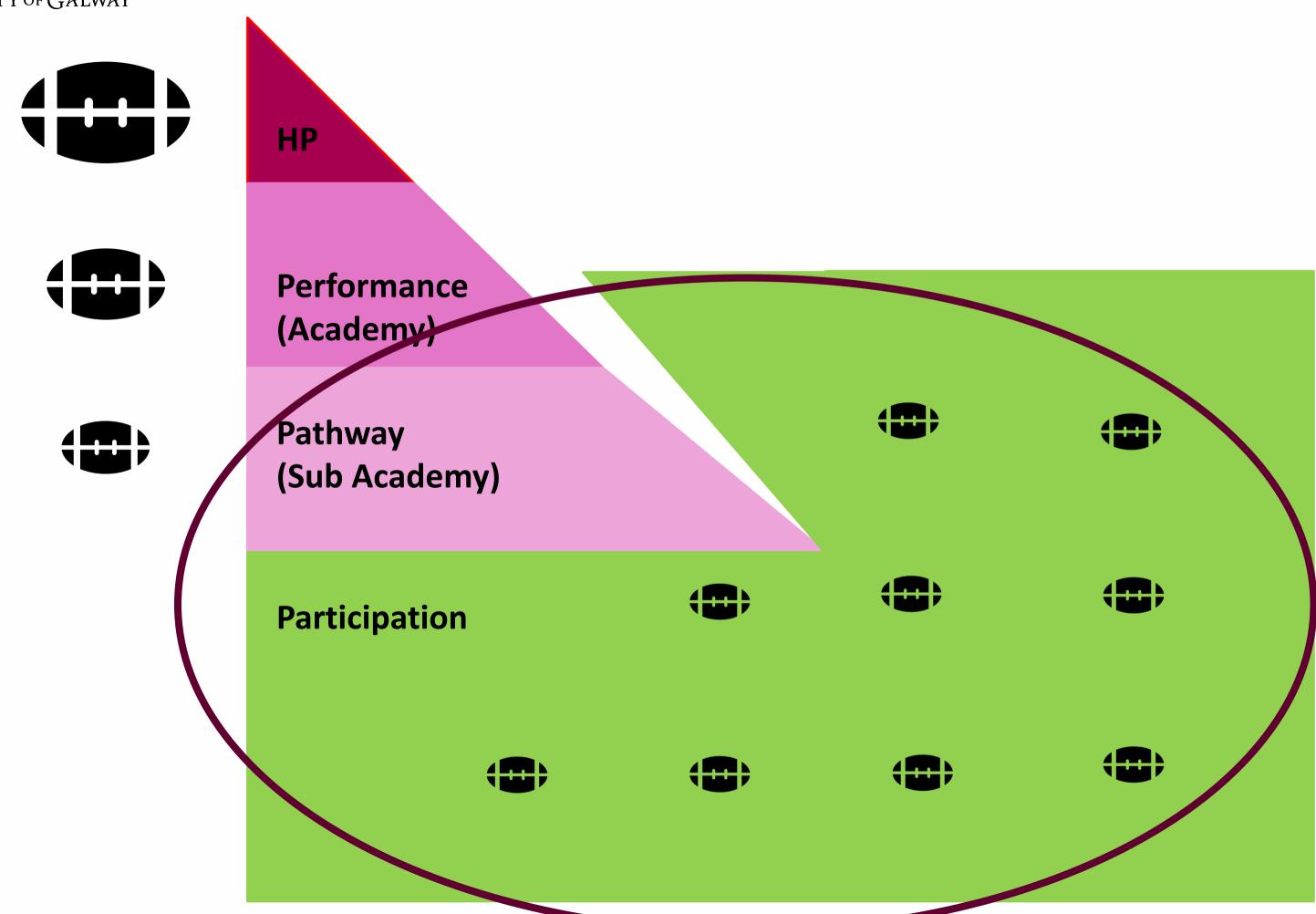






## National Governing Bodies Focus



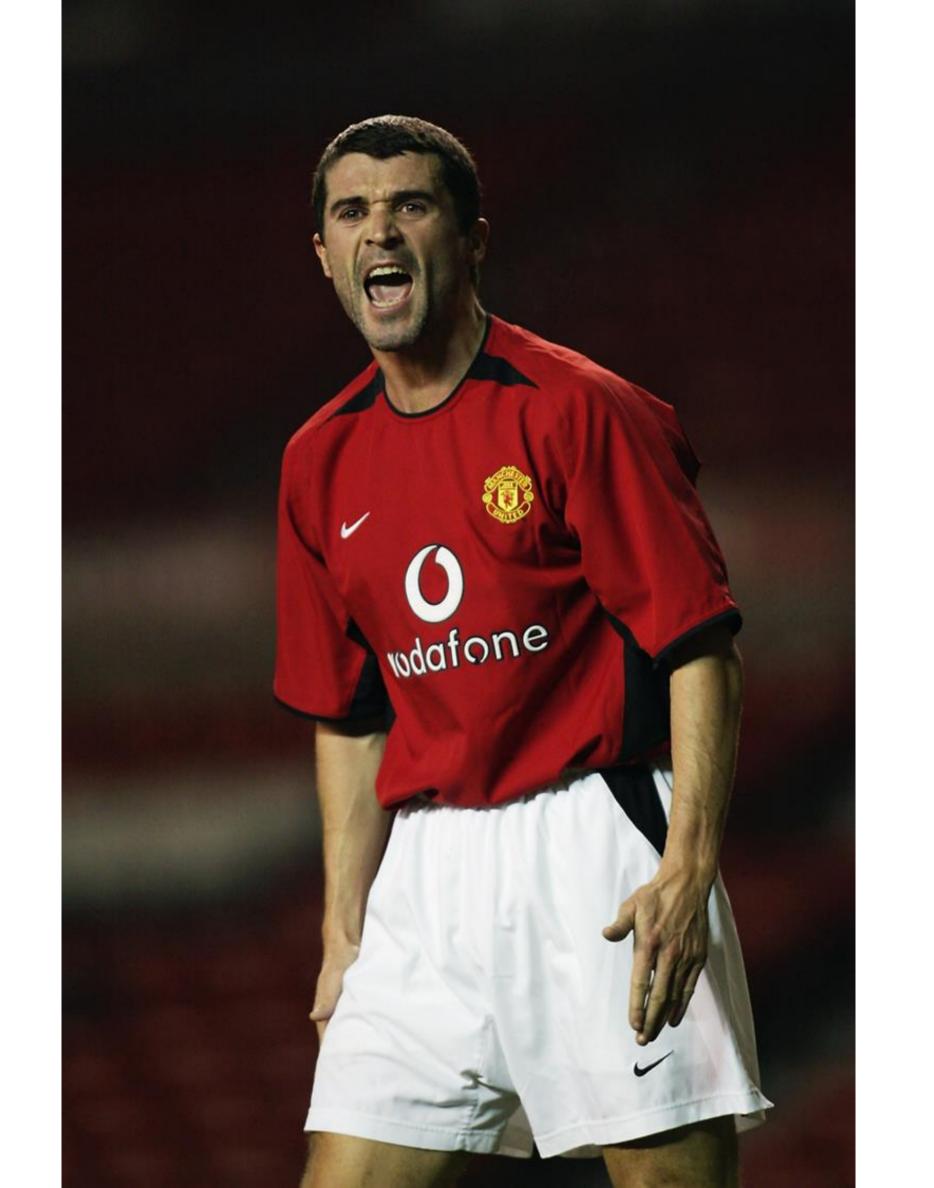


### Spórt

## QUESTION



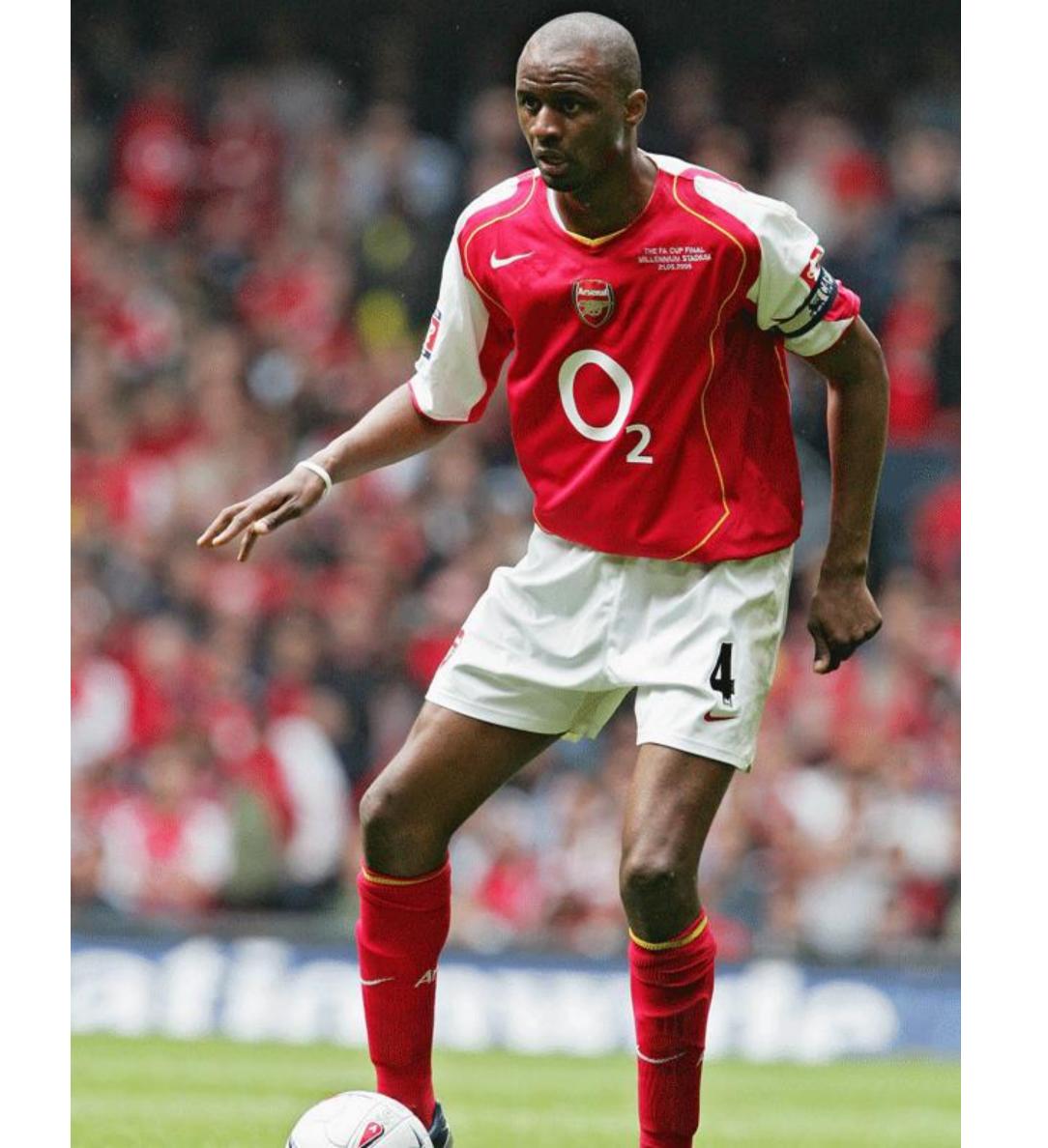




































## Community





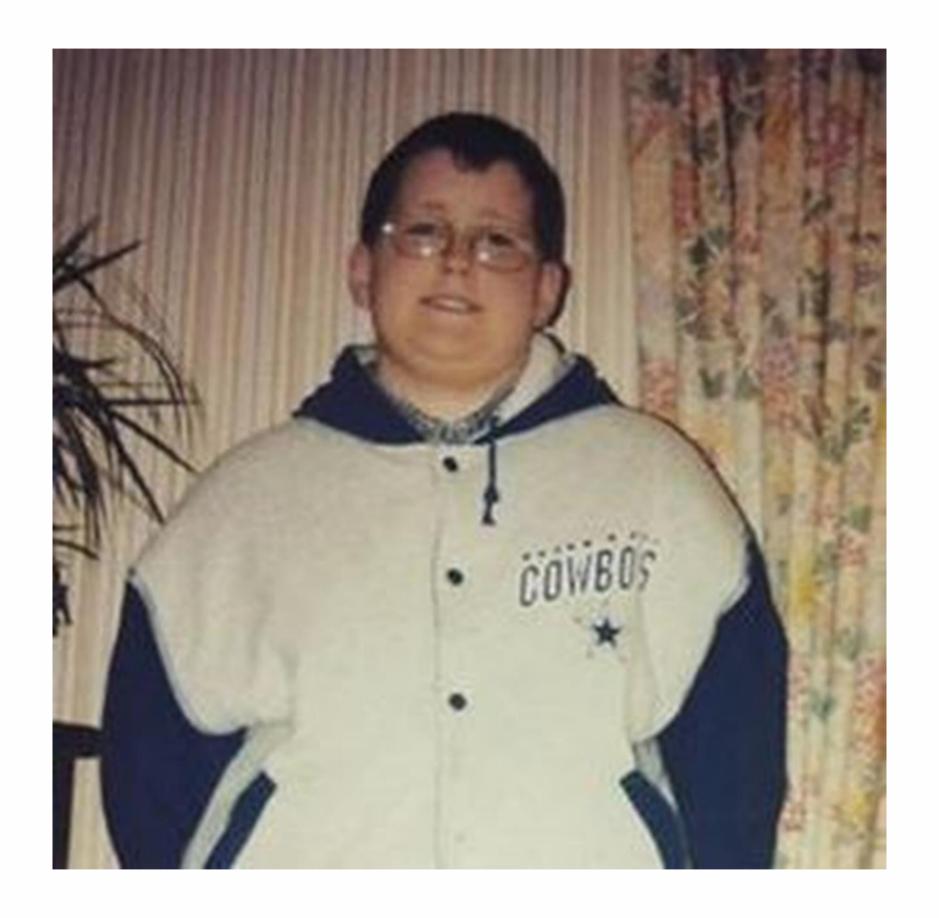




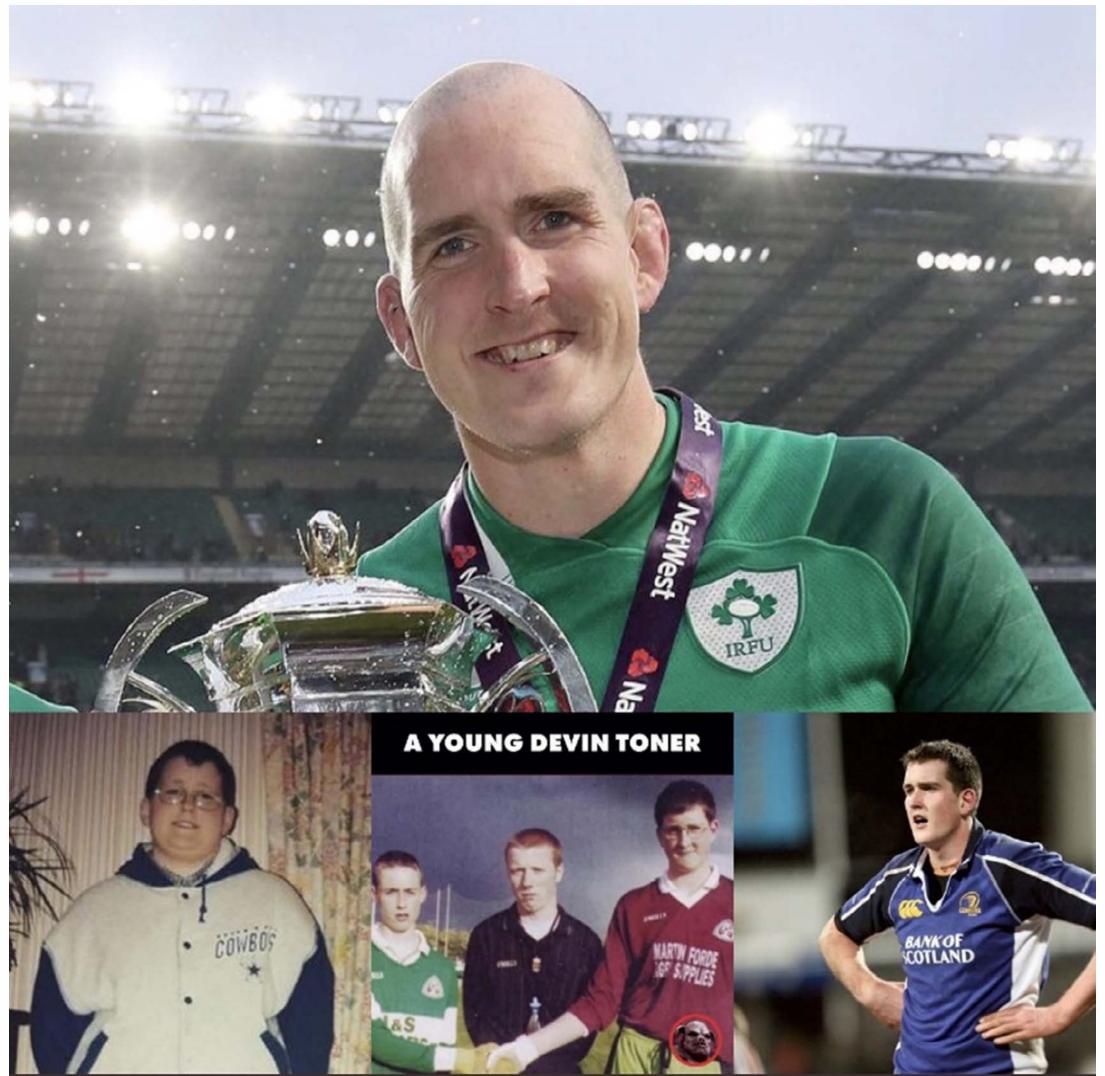




























# QUESTION — WHATIS IN PLACE TO MANAGE THIS ATTHE MOMENT?





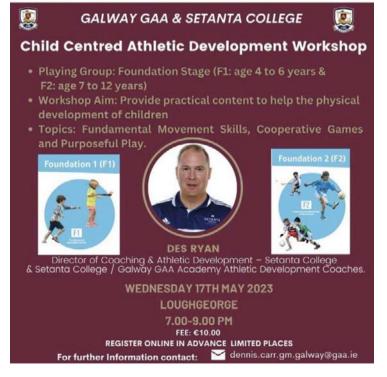














## Stages

- (1) I don't Know
- (2) I know (But they don't)
- (3) Ahh I need to know more (Deeper knowledge)
- (4) I know (It lives in the environment)



































## Examples.









### Players who didn't get selected for their Minor team.

### 1. Diarmuid Murphy (Kerry)

2. Ryan McMenamin 3. Tony Scullion 4. Tom O'Sullivan (Tyrone) (Derry) (Kerry)

5. Lee Keegan 6. Conor Gormley 7. Philip Jordan (Mayo) (Tyrone) (Tyrone)

8. Brian Fenton 9. John McDermott (Dublin) (Meath)

10. Kevin McManamon 11. Martin McHugh 12. Johnny Doyle (Dublin) (Donegal) (Kildare)

13. Bernard Brogan 14. Bomber Liston 15. Conor McManus (Dublin) (Kerry) (Monaghan)

Paul O'Dowd (Cavan)

Francie Bellew (Armagh)

James Nallen (Mayo)

David Brady (Mayo)

Neil Gallagher (Donegal)

Brian Roper (Donegal)

Pearse O'Neill (Cork)

Damien Comer (Galway)

Donnacha O'Connor (Cork)

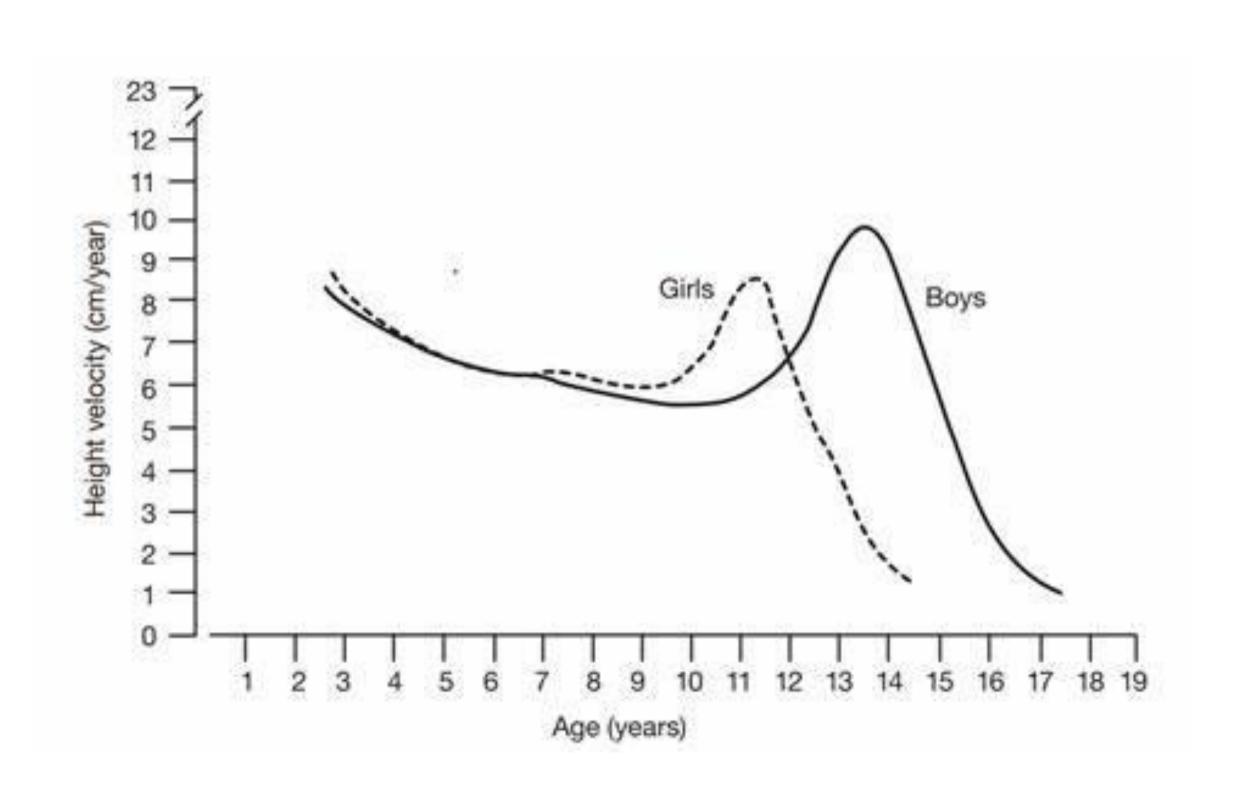
## WHAT CAN WE DO.

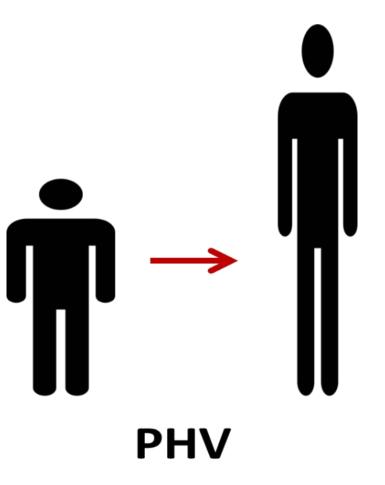






#### Peak Height Velocity.



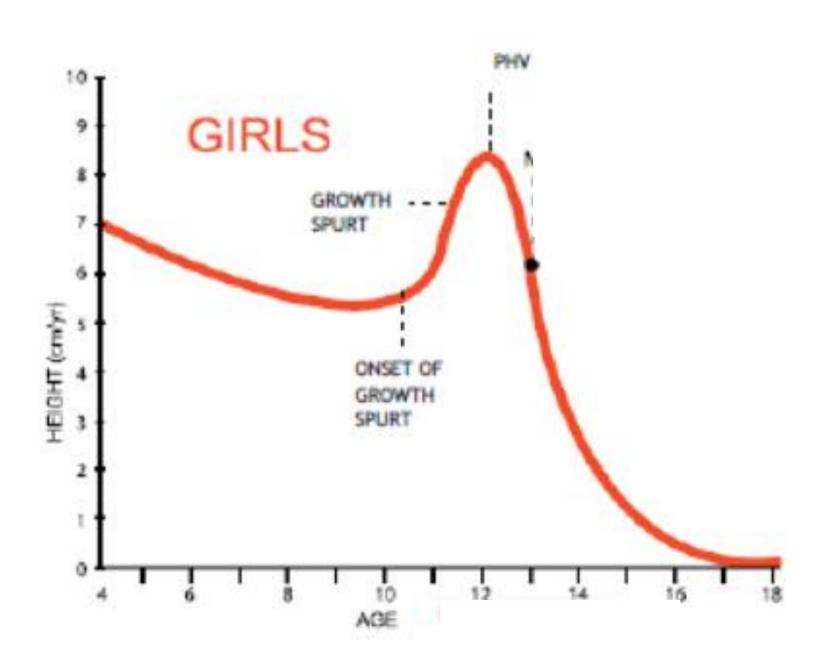








#### Peak Height Velocity.



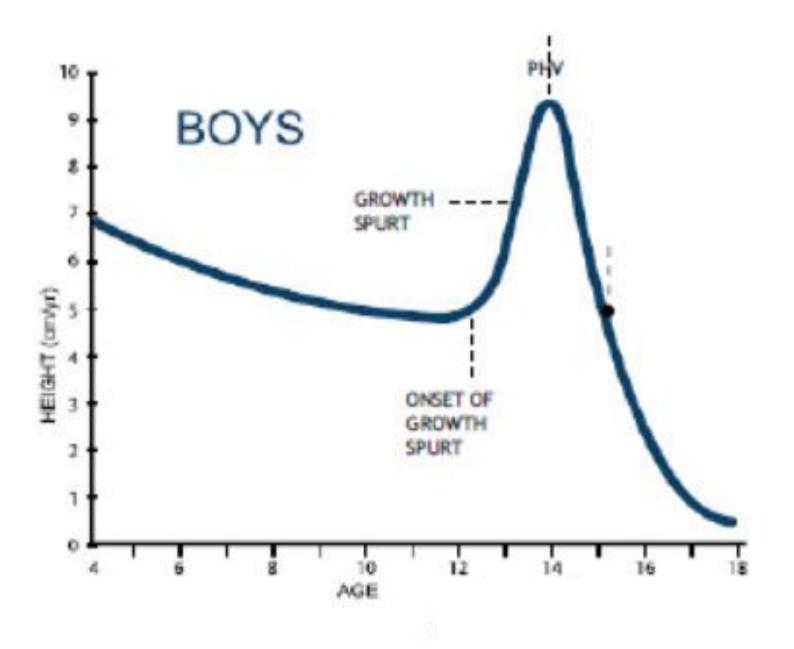


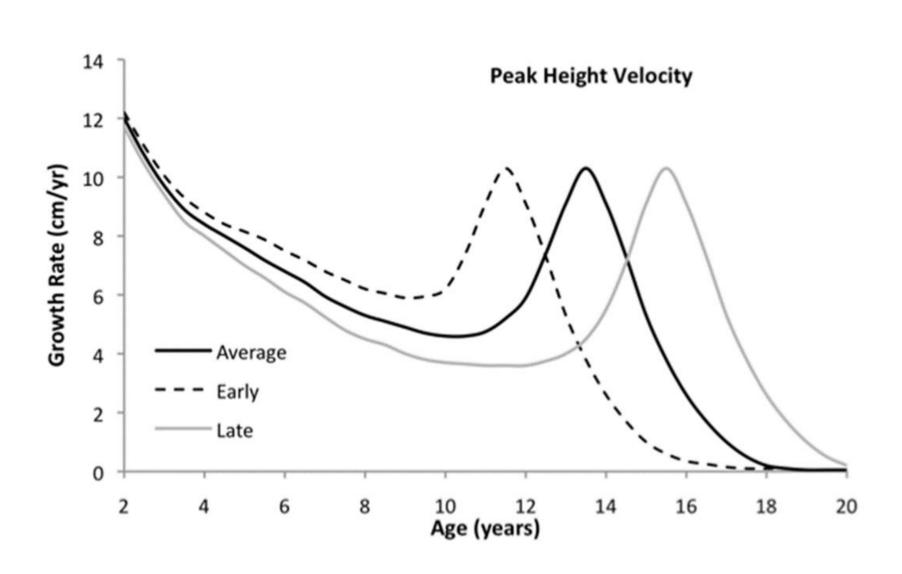
Figure 1. The adolescent growth spurt, and PHV for girls (left) and boys (right). Taken from Canadian Sport for Life (Balyi & Way, 2005)







#### Different Timings.

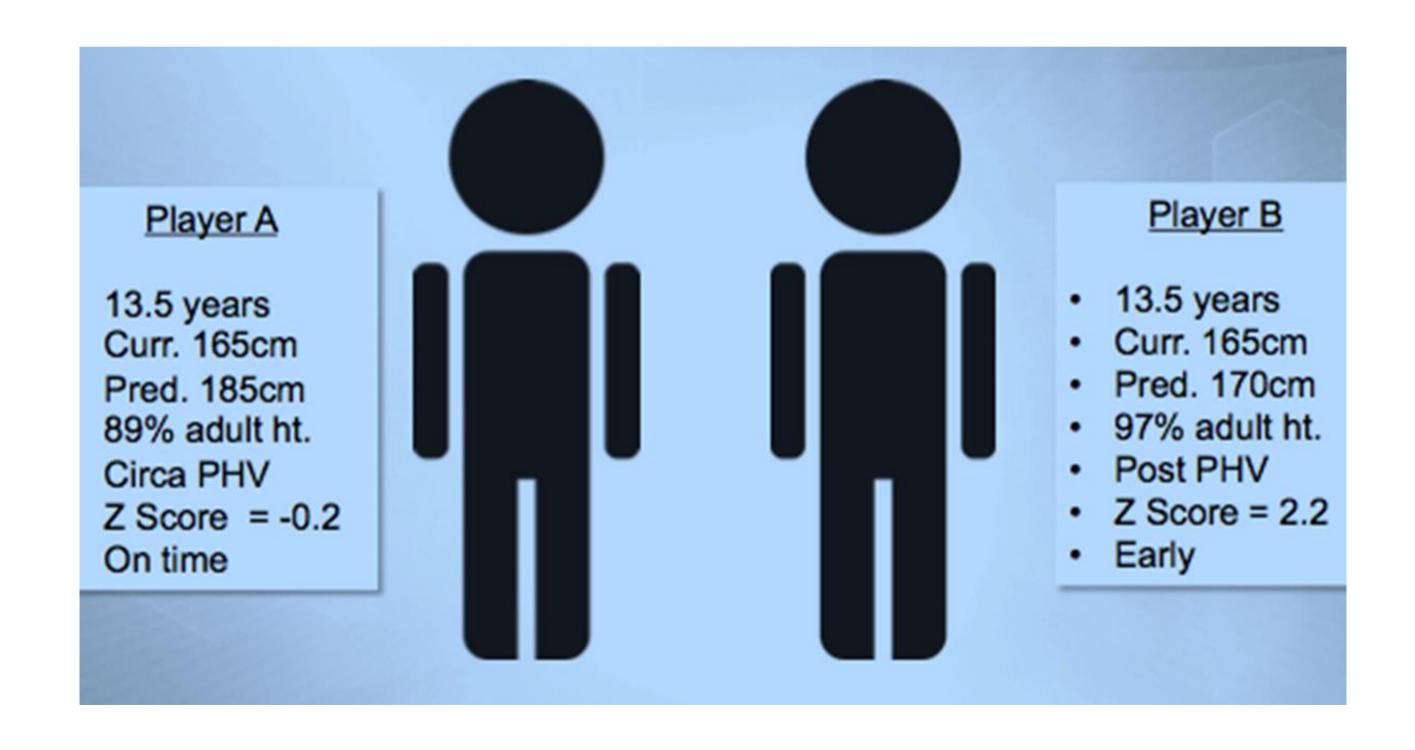








#### Example Case.





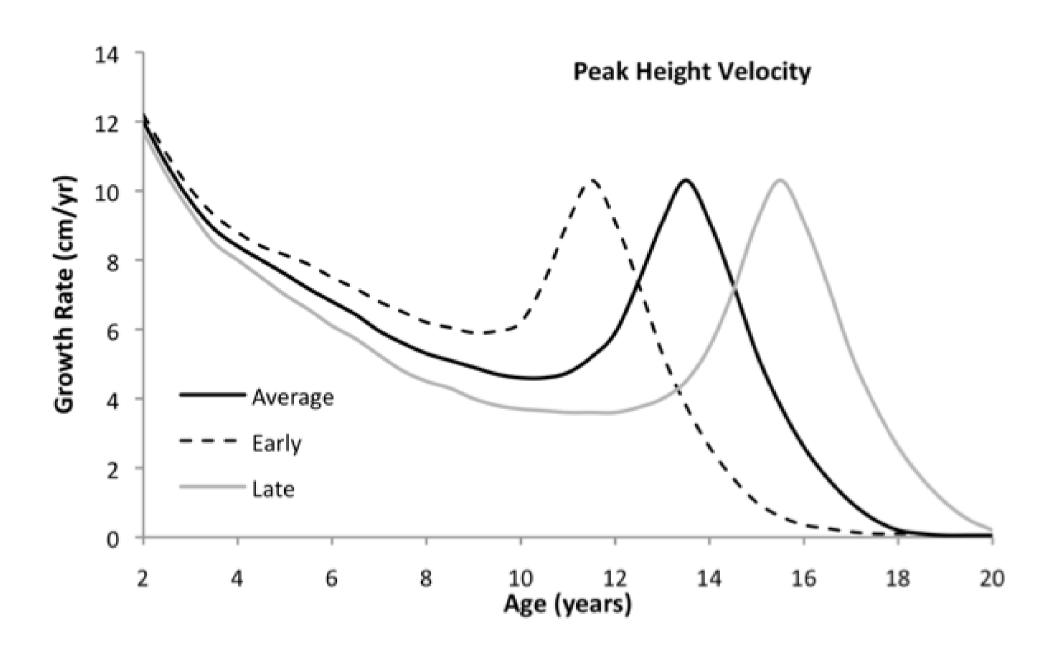




#### Practical Application.

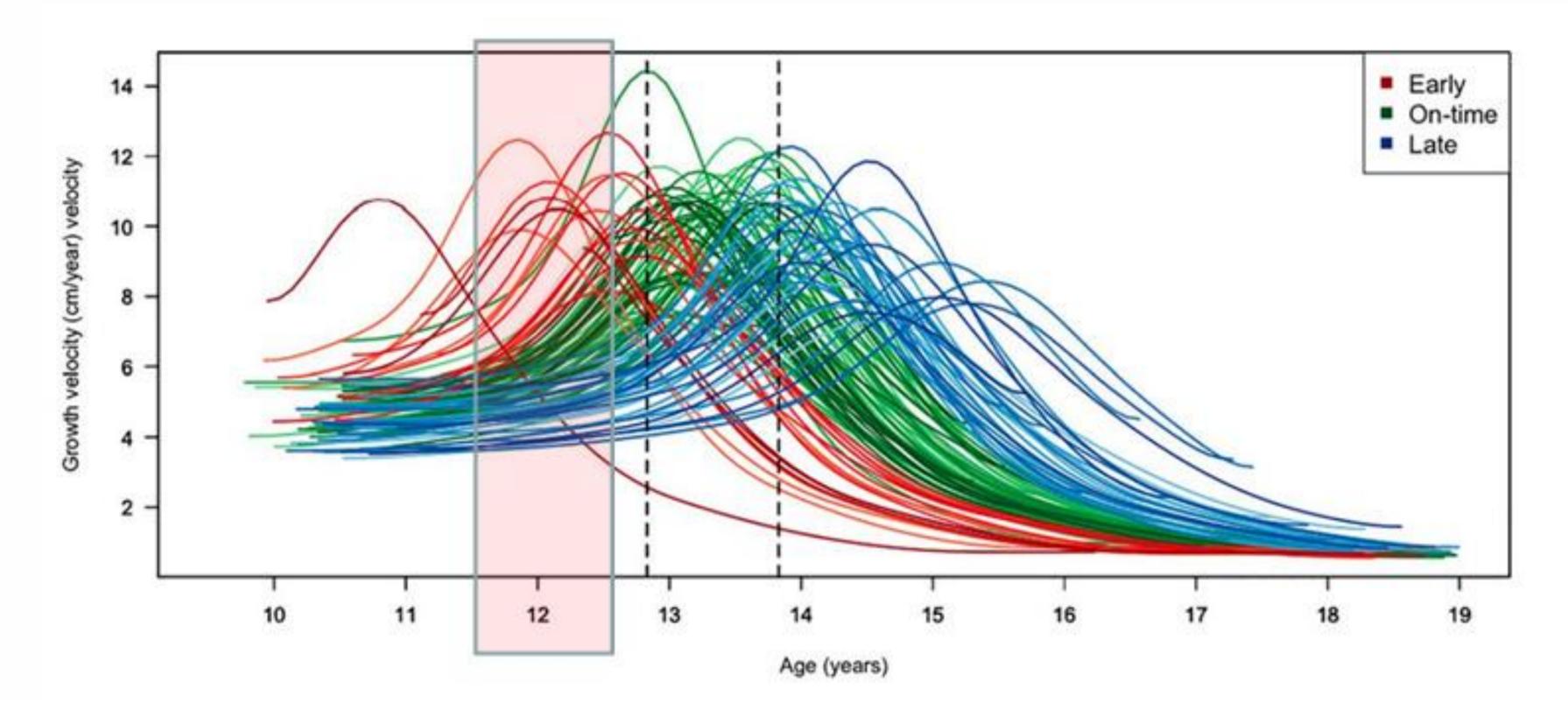
- Once we know this information we can understand the player better. –
- (1) If the player is close to their PHV we can focus on the player to see if there is any adolescent awkwardness or growth related injuries.
- (2) You can understand if the player is an early, on time or late developer.
- (3) You can have an understanding of how tall they will be as an adult.
- (4) You can support late developers to avoid drop out.
- (5) You can support early developers with extra technical work.

# EXAMPLE OF GOOD PRACTICE.





#### Early / Late / On time developer.





## U13 to U16





#### Our study

### The influence of maturity status on movement quality among English Premier League academy soccer players

Desmond Ryan 1, Alan McCall 1, 2, Gerry Fitzpatrick 3, Liam Hennessy 4, 5, Tim Meyer 6, Robert McCunn 6, 7

<sup>1</sup>Research & Development Department, Arsenal Football Club, London, UK, <sup>2</sup>Research & Development Department, Edinburgh Napier University, Edinburgh, UK, <sup>3</sup>Department of Sport and Exercise Science, Waterford Institute of Technology, Waterford, Ireland, <sup>4</sup>Setanta College, Tipperary, Ireland, <sup>5</sup>Faculty of Life Sciences, University of South Wales, Pontypridd, UK, <sup>6</sup>Institute of Sport and Preventive Medicine, Saarland University, Saarbrücken, Germany, and <sup>7</sup>Oriam: Scotland's Sports Performance Centre, Heriot-Watt University, Edinburgh, UK

Association football | movement competency | youth | screening

#### Headline

The precise timing and tempo of maturation varies between individuals, hence, it is important to consider chronological age and maturity status separately. (6) Failure to do so exposes applied practitioners and coaches to the risk of unfairly judging young players' abilities. Since assessments of movement quality are widely used within professional soccer, a greater understanding of the influence physical maturity has on this attribute may help applied practitioners better interpret the results. (14)

Aim. The aim of the present study was to determine the influence of physical maturity status on Functional Movement Screen (FMS™) score, countermovement jump (CMJ) height and 0-10m-sprint time. Add ally, the relationships between these physical tests we have trigated.

Design. Cross-sectiona

#### Methods

Athletes. One-hundred and thirty male players registered with an English Premier League soccer club youth academy agreed to participate in the present study (age 13.8 ± 2.9 years, height 167.9 ± 13.3 cm, body mass 57.3 ± 15.1 kg). Inclusion enteria reconstruction and aligible for the under 11. 12, -1. 14, -15. 6 or -1. quark Project at a set the way and aligible for the under 11. 12, -1. 14, -15. 6 or -1. quark Project at a set the way are not better all or all still produce. The structure of the way are not by the Way of the unterestimated of Helsinki. No raw data has been provided in the appendices due to legal regulations and restrictions about the sharing of player data. Therefore, only aggregated, non-identifiable data is provided in this manuscript.

Design. The present study adopted a cross-sectional design. Players meeting the inclusion criteria were assessed using the FMS™, and also performed CMJ and timed 0-10m sprints, immediately following the pre-season period of the 2015/16 soccer season. Participants' maturity status was also assessed using the method outlined by Khamis and Roche.(11)

Methodology. All physical tests were conducted by United Kingdom Strength and Conditioning Association accredited strength and conditioning coaches or chartered physiotherapists. Assessments were completed in the following order: height and body mass measurement, FMS™, CMJ and finally the 0-10m-sprint test. Height and body mass were measured using a Harpenden stadiometer (Holtain Ltd, UK) and Seca

877 scales (Seca GmbH & Co., Germany). Official FMS™test kit was used (Functional Movement Systems Inc., USA). CMJ height was measured using the Optojump-Next system (Microgate, Italy). The 0-10m-sprint times were quantified using Brower electronic timing gates (Brower Timing Systems, USA). Percentage of estimated adult height (PAH) was used to quantify maturity status for each player. (11) Participants' age, height and body mass were required for the prediction equation in addition to the heights of both biological parents. Since adults tend to overestimate their height, the self-reported height of each parent was adjusted for overestimation using a previously established equation.(8) A standardised warm up consisting of light aerobic activity and dynamic stretching was completed by all participants prior to performing the FMS™. All testers had pultiple years experience i conducting the k a re-cap of all procedu prior to testing owing order: deep squat, hurdle step, in-line lunge, shoulder mobility, active straight leg raise, trunk stability push up and rotatory stability. Participants performed CMJs as previously described; with hands on hips and knees flexed until approximately 90 degrees during the counter-movement portion of the jump. (2) Three maximal jumps were performed with the greatest height used for analysis. Similarly, players performed

#### Statistical Analysis

Data are presented as the mean ± SD. Maturity groups (pre-, circa- and post-pubertal) were formed using previously established thresholds based on PAH.(6) Players with a PAH <88%, 88-96% and >96% were categorised as pre-, circa- and post-pubertal respectively.(6) Maturity groups were then compared with each other in relation to their FMS", CMJ and 0-10m scores. Cohen's d effect sizes were calculated to demonstrate the degree of difference between groups and were interpreted as: trivial (0<ES<0.2), small (0.2<ES<0.6), moderate (0.6<ES≤1.2), large (1.2<ES≤2.0), very large (2.0<ES≤4.0) and extremely large (ES>4).(3, 10) Furthermore, inference was subsequently based on the disposition of the confidence interval for the mean difference to the aforementioned effect size thresholds and calculated as per the magnitude-based inference approach using the following scale: 25-75%, possibly; 75-95%, likely: 95-99.5%, very likely: >99.5%, most likely.(10)



sportperfsci.com 1 SPSR - 2018 | Jui | 32 | v1

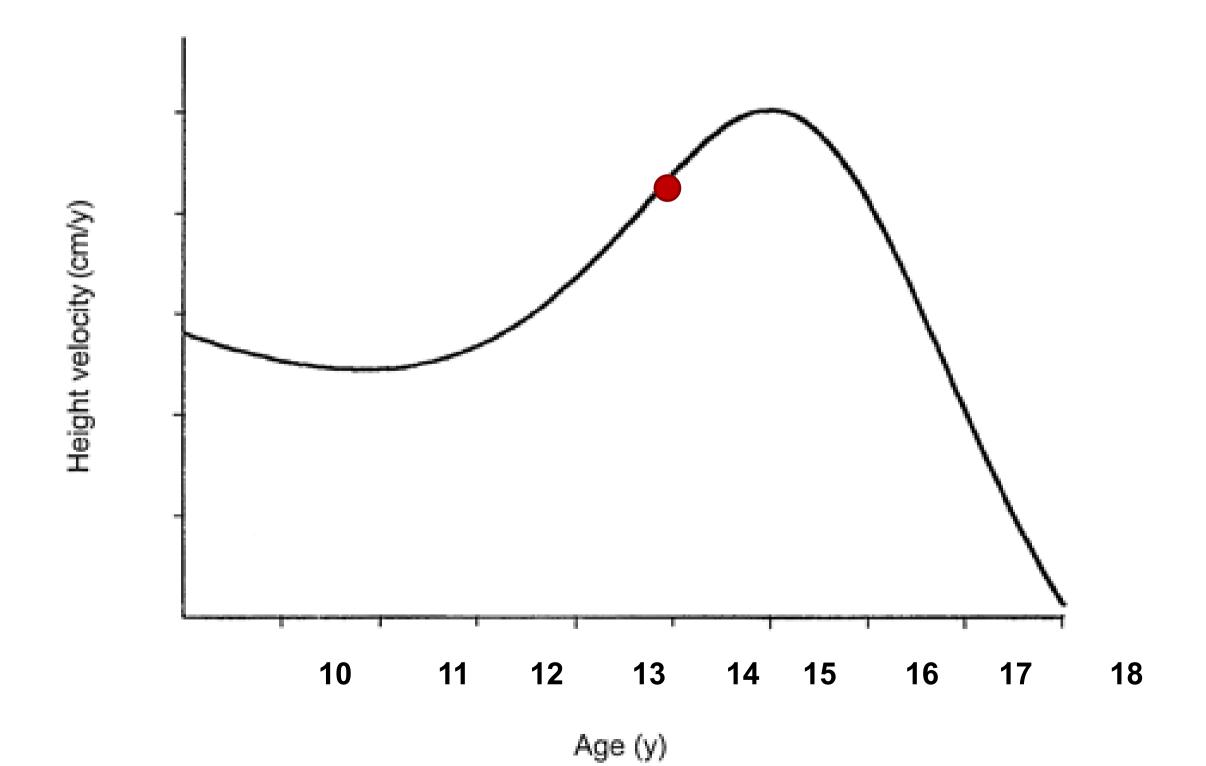
Player A (17<sup>th</sup> October 2013)

Date of Birth -25/5/2000 (13yrs and 6 months)

Height – 146.3cm

Weight – 35.3kg

Push Up - 29





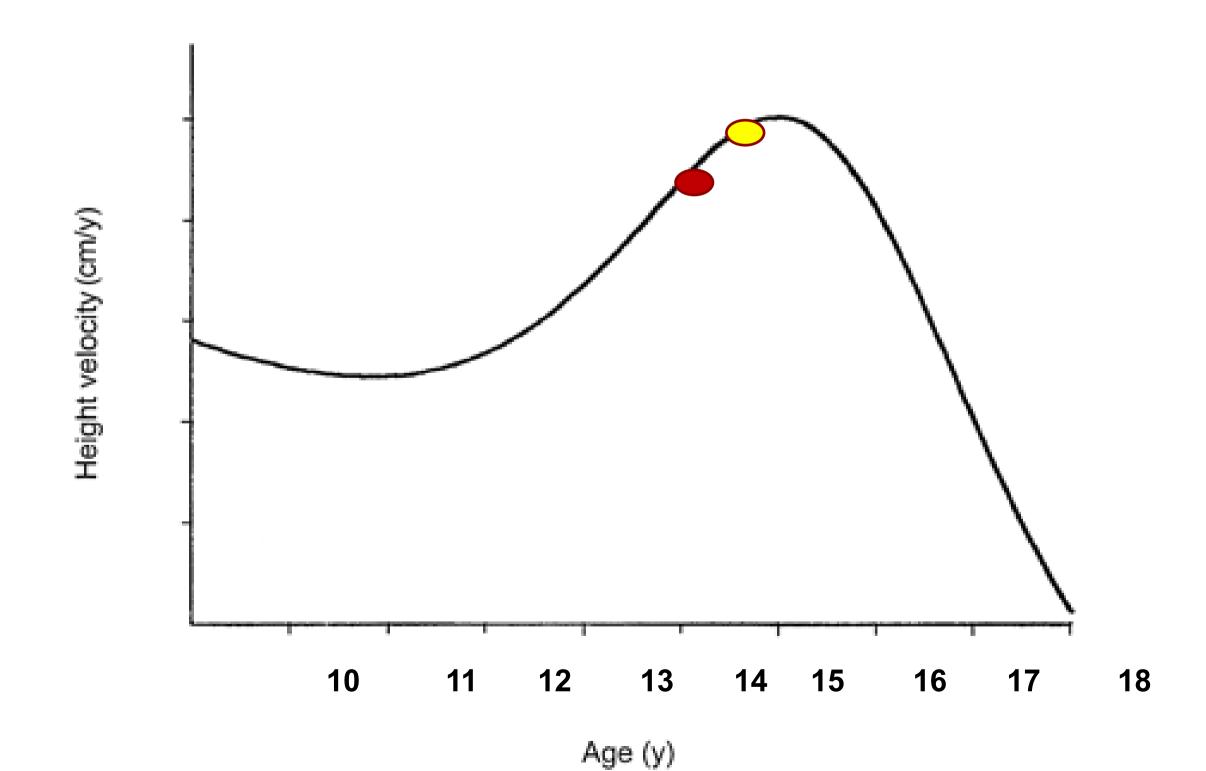
Player A (20th February 2014)

Date of Birth – 25/5/2000 (13yrs and 10 months)

Height – 146.3cm – 153.2cm (6.9cm increase)

Weight – 35.3kg – 42.2kg (6.9kg increase)

Push Up -29 - 41 (increased by 12 reps)



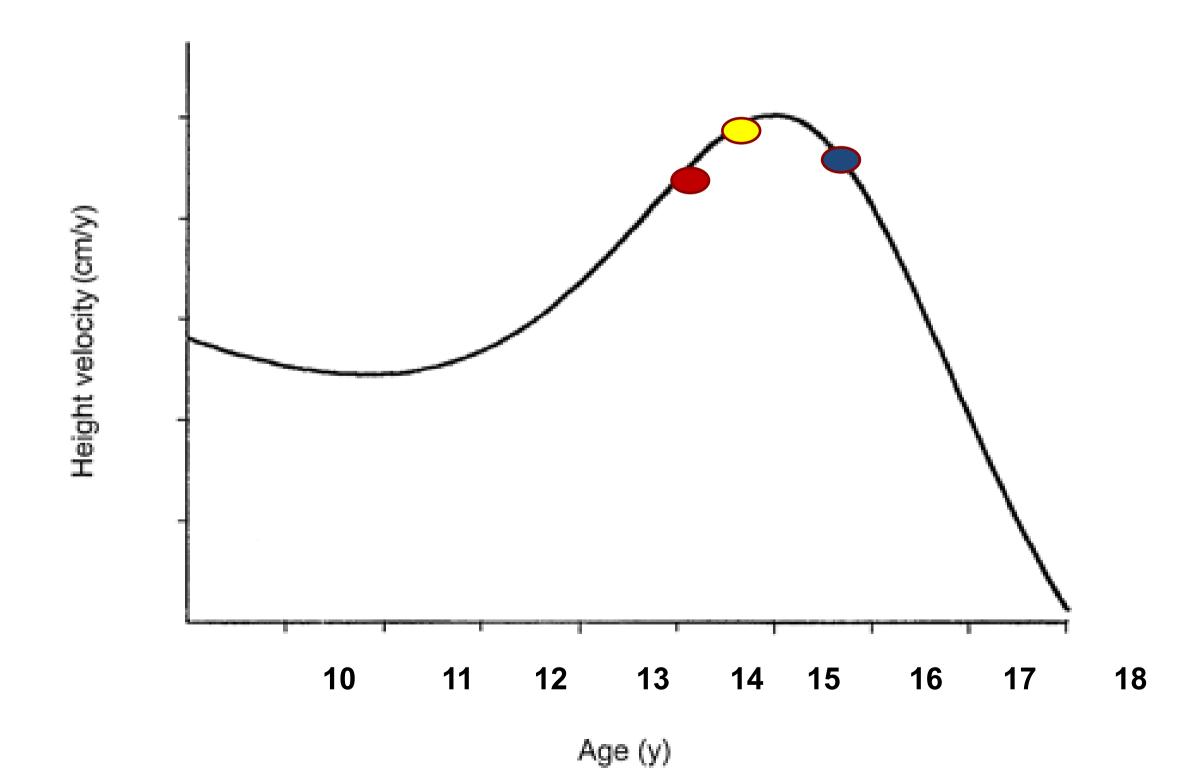
Player A (27<sup>th</sup> August 2015)

Date of Birth – 25/5/2000 (15yrs and 3 months)

Height – 146.3cm – 153.2cm – 166.3 (20cm increase)

Weight – 35.3kg – 42.2kg – 57.9kg (20.6kg increase)

Push Up -29 - 41 - 53 (increased by 24 reps)





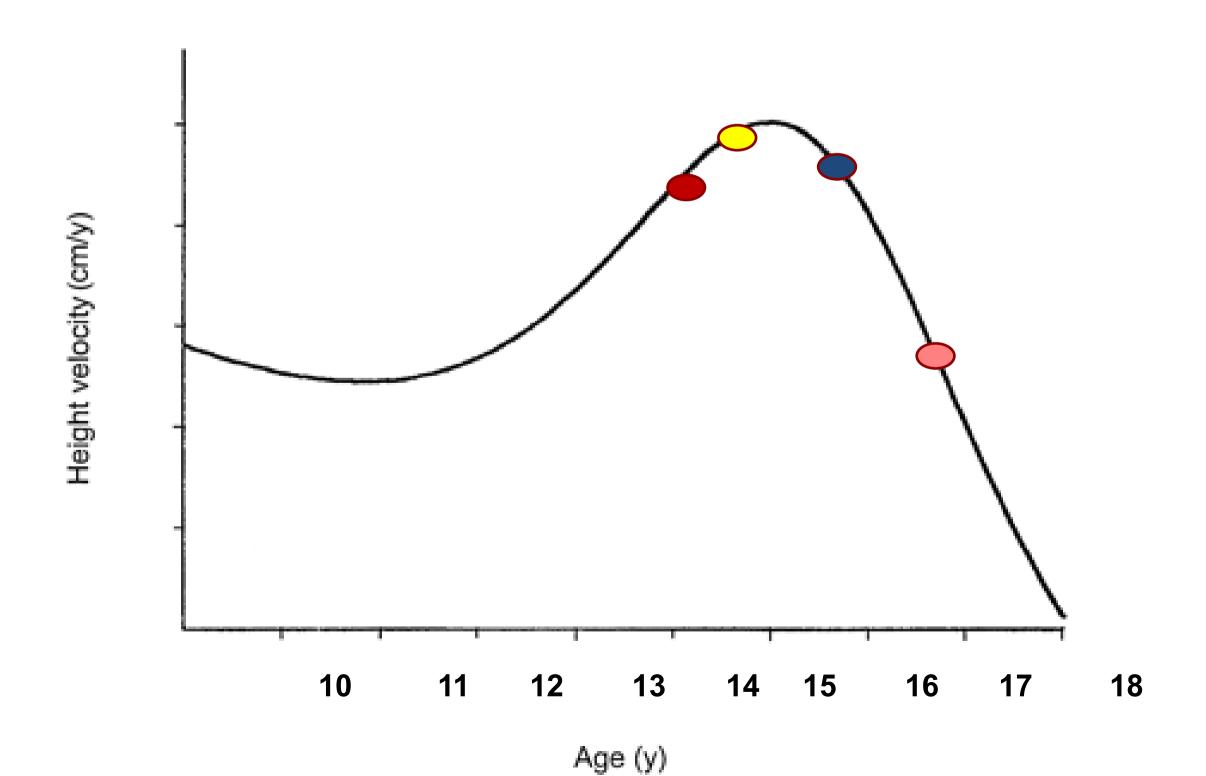
Player A (27<sup>th</sup> August 2016)

Date of Birth -25/5/2000 (16yrs and 3 months)

Height – 146.3cm – 153.2cm – 166.3 – 169.8 (23.5cm increase)

Weight – 35.3kg – 42.2kg – 57.9kg – 60.9 (23.6kg increase)

Push Up -29 - 41 - 53 - 57 (increased by 28 reps)





## CORK GAA & KERRY GAA – FIONN FITZGERALD U14 / U15 / U16 TALENT

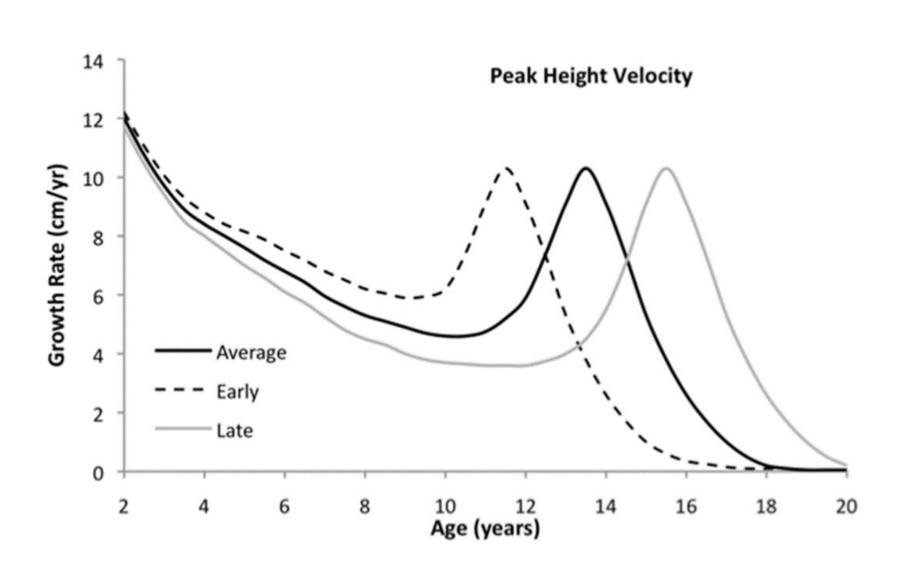
DEVELOPMENT SQUADS







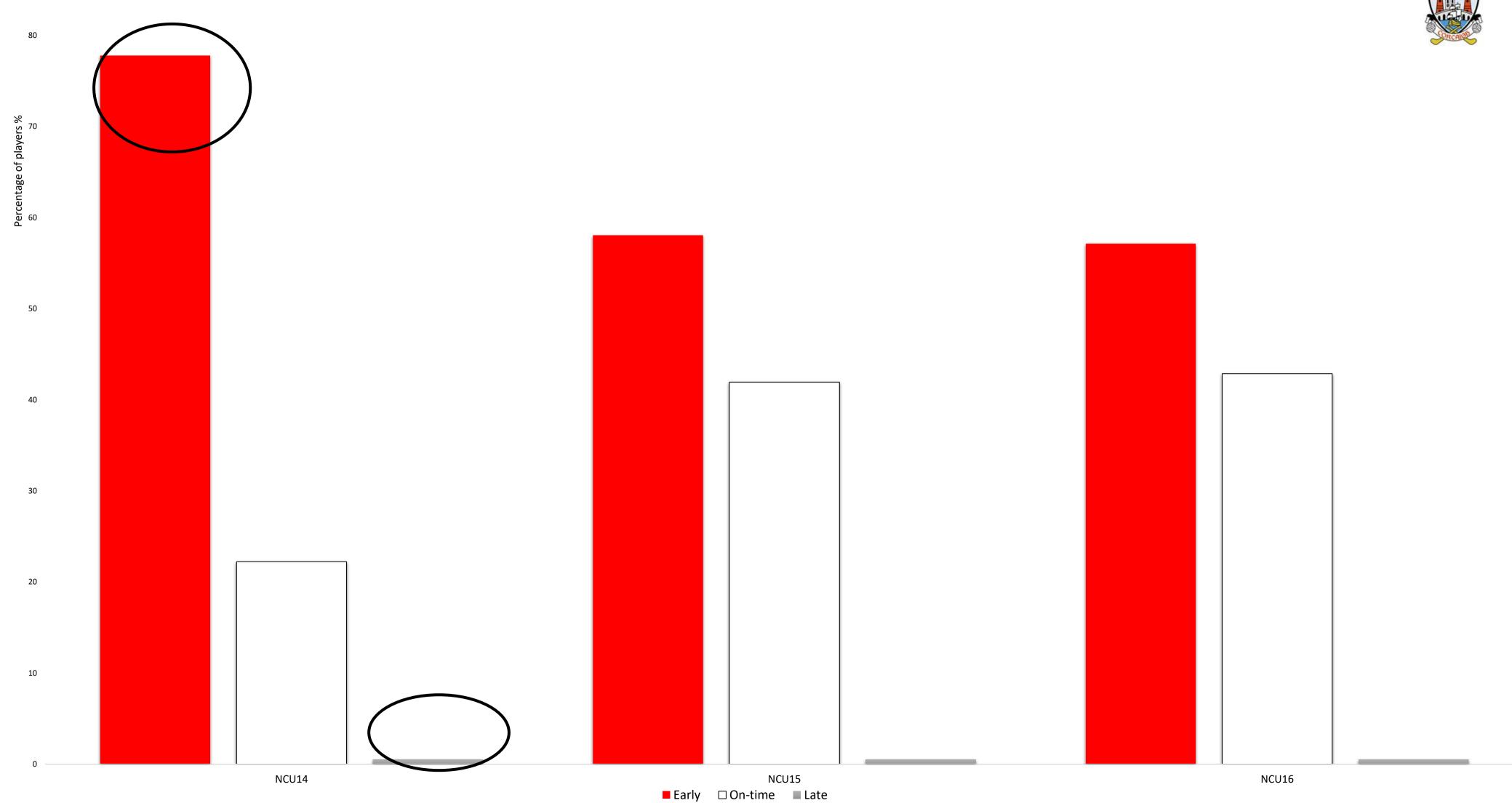
#### Different Timings.

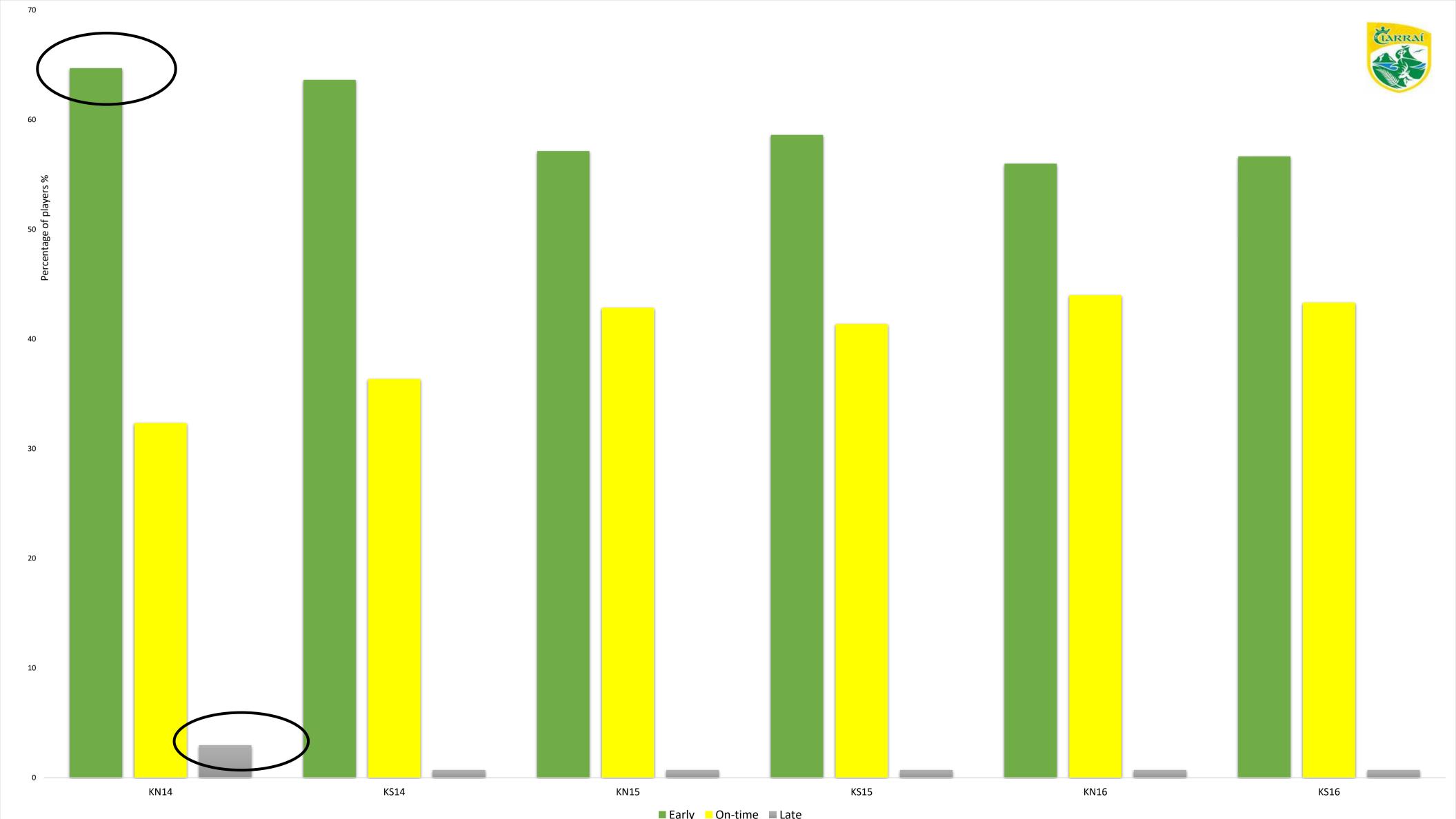


#### Normal Distribution

Late	On Time	Early
15%	70%	15%





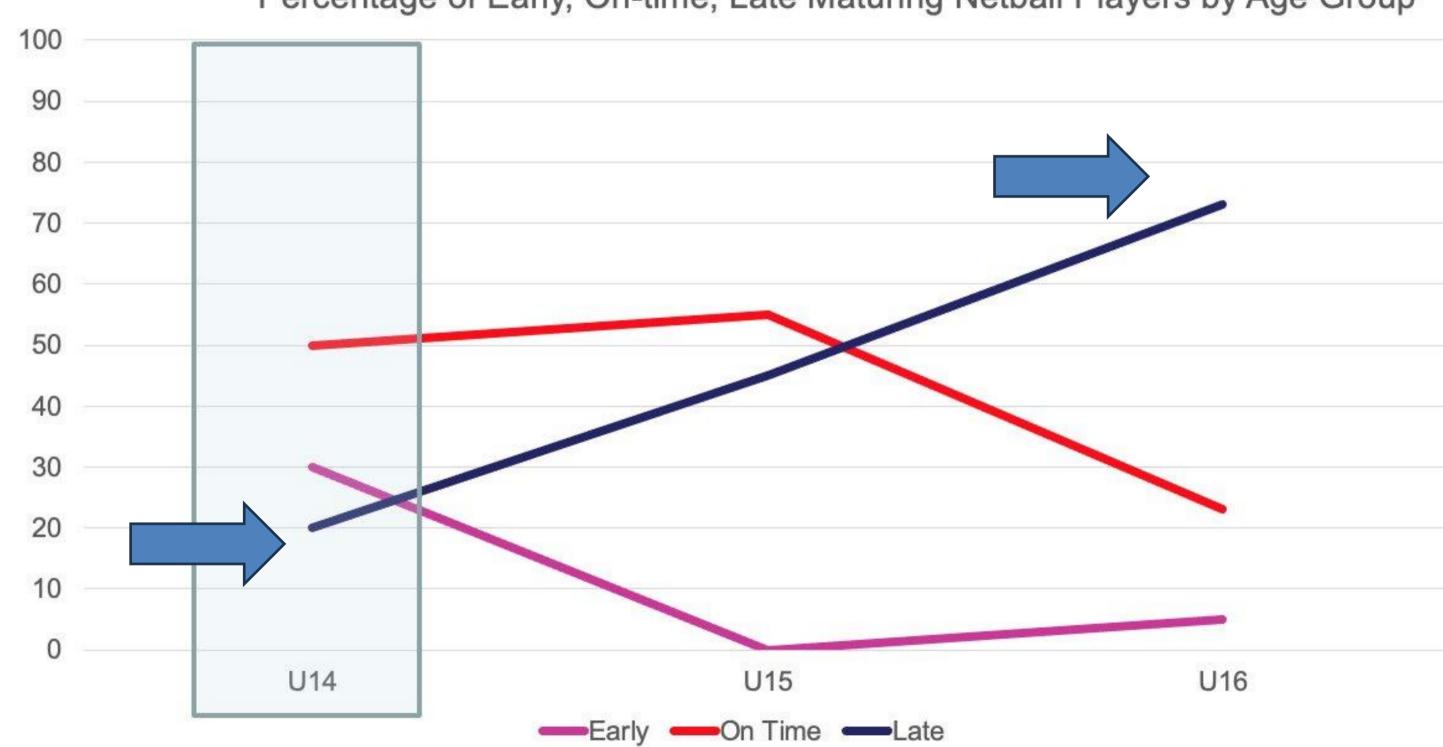


## GIRLPLAYERS

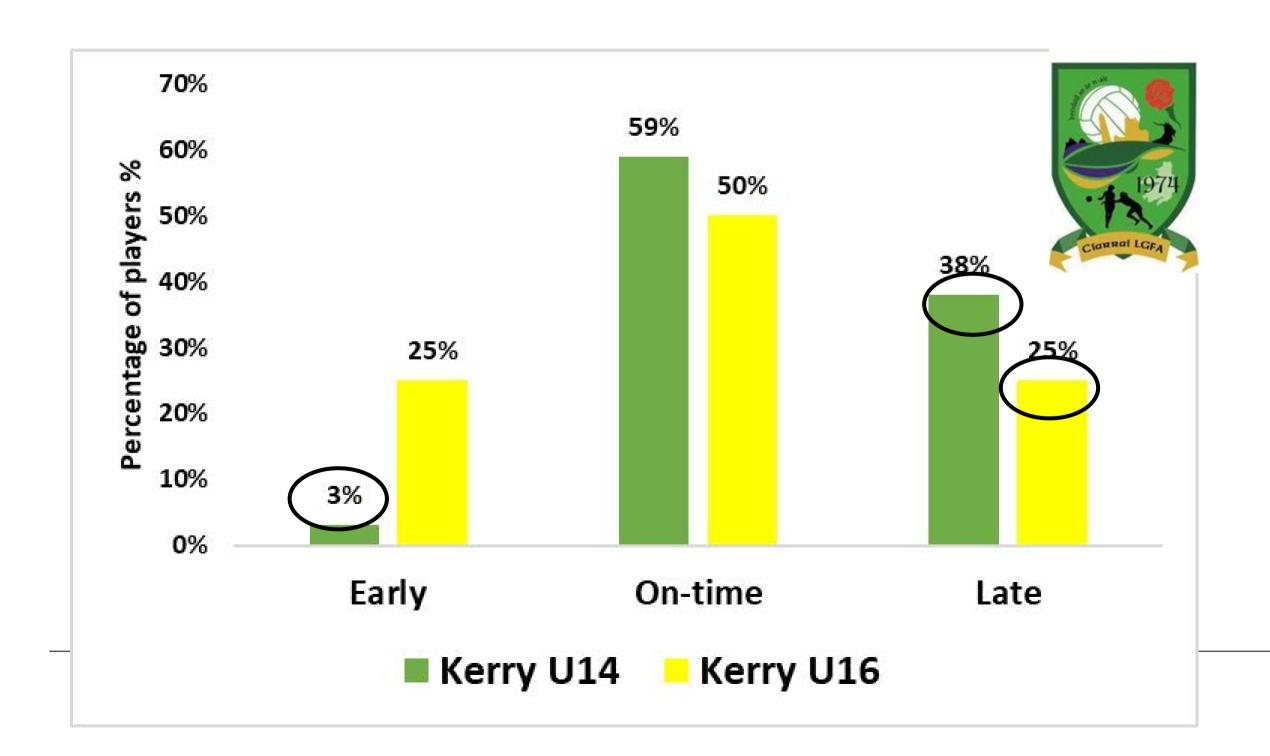
#### Maturity selection biases in academy netball







#### Maturity timing

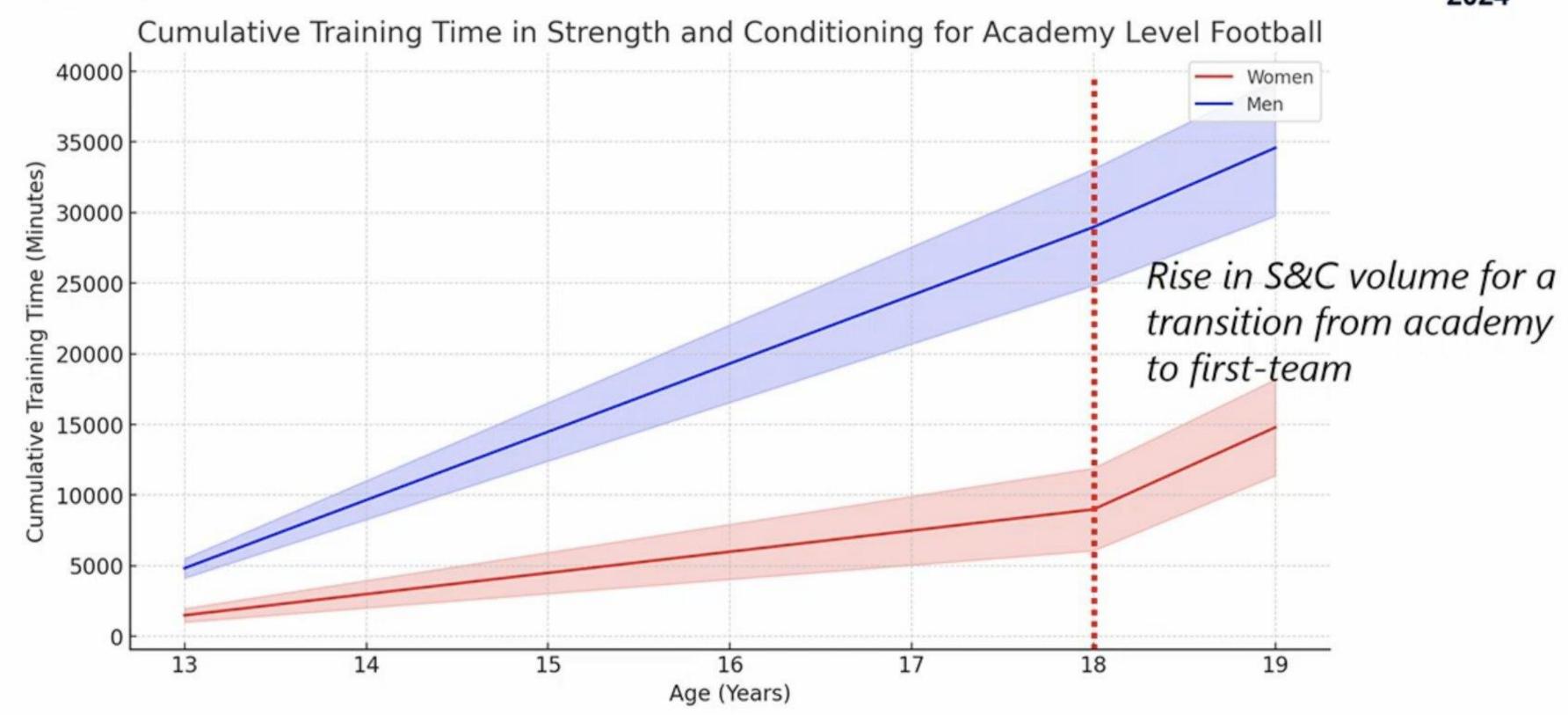




#### Women's strength and conditioning accumulation

FIFA Medical Conference 2024

Habitual or cramming?



McQuilliam et al (2022) reports a significant increase in in-season S&C duration (16 to 55 minutes) with a "non-significant" increase in frequency per week (1.56 to 2.26).

## Case Study



## LATE DEVELOPERS





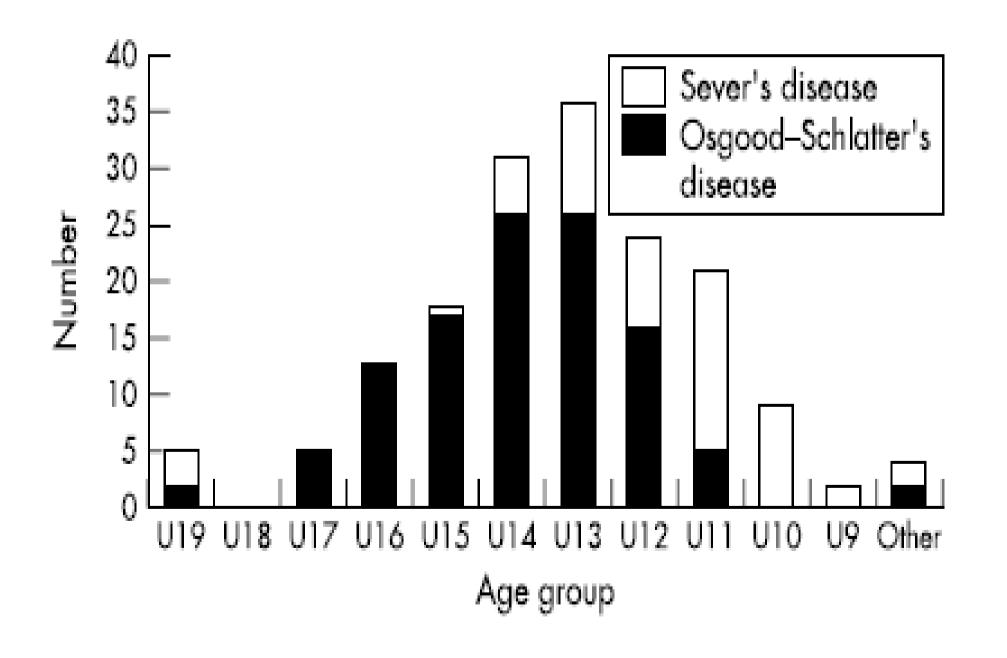






## GROWIH RELATED INJURIES

### Incidence of physeal injuries in Academy football \*





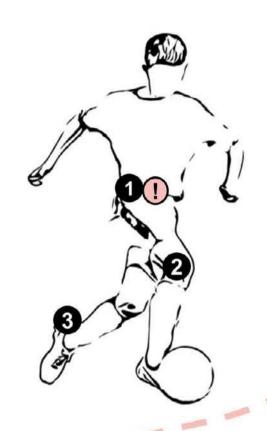






#### ATHLETIC CLUB

#### **Pre-PHV**



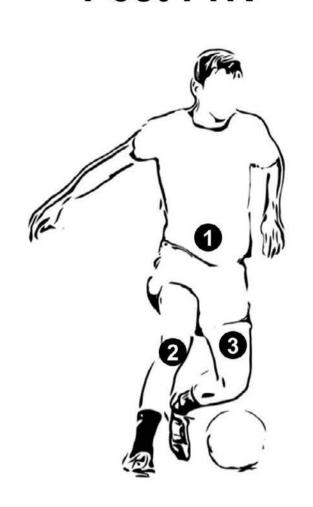
Injury burden (Days lost/ player-season)	Injury prevalence	Absence days/inj.
2.7	17%	14
3.9	19%	13
1.5	9%	15
1.5	18%	8
	(Days lost/ player-season) 2.7 3.9 1.5	(Days lost/player-season) prevalence  2.7 17%  3.9 19%  1.5 9%

#### Circa-PHV



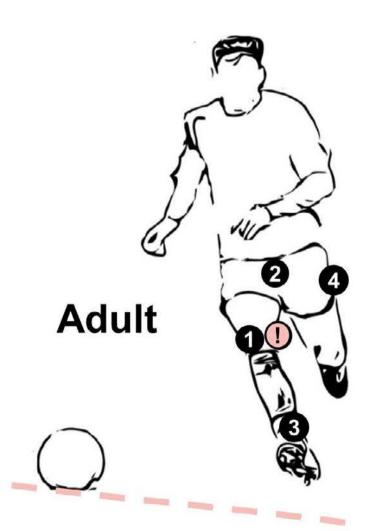
	Injury burden (Days lost/ player-season)	Injury prevalence	Absence days/inj.
1- AllS osteoch.	9.8	15%	29
2- Spondylolysis	8.1	3%	130
3- Ischial osteoch	4.2	5%	22

#### **Post-PHV**



	Injury burden (Days lost/ player-season)	Injury prevalence	Absence days/inj.
1- Spondylolysis	s 21	14%	100
2- Knee lig.	9.1	25%	30
3- Quadriceps	3.4	35%	11

Injury burden (Days lost/ player-season)	Injury prevalence	Absence Days/inj.
53.2	35%	28
81.4	53%	70
14.9	19%	4
5.6	33%	17
3.6	45%	6
	(Days lost/ player-season) 53.2 81.4 14.9 5.6	(Days lost/player-season) prevalence  53.2 35%  81.4 53%  14.9 19%  5.6 33%



## BIOLOGICAL MATURATION & PHYSICALTESTING

## BIOBANDING

# ASSESSING BIOLOGICAL MATURATION.



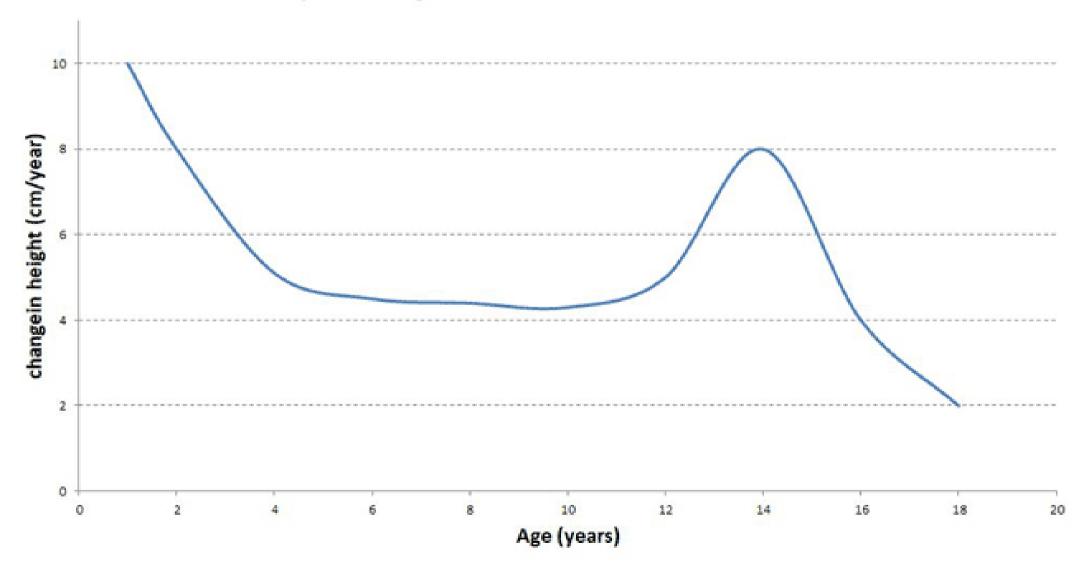




#### Biological Maturation.

• Example of Height Measurement over time.

#### example height measurement over time









#### Khamis-Roche Method.

- Provides an Estimation of Adult stature and current percentage of that stature.
- Which can be used to identify if they have past PHV (92% of adult stature).
- Also calculates maturity status (z score).
- Need players DOB, height, weight, and both biological parents heights.







#### Methods of estimating Biological Maturation.

- Khamis-Roche Method.
- Needed –
- (1) Player Height
- (2) Player Weight
- (3) Player Date of Birth
- (4) Date of Test
- (5) Parents Height

Calculator	e Method	
Height of Child (cm)		
Height of Child		
Mother's Height (cm)		
Mother's Height		
Father's Height (cm)		
Father's Height		
Weight of Child (kg)		
Weight of Child		







Strengths	Weaknesses
Most reliable non invasive method to calculate maturity status	Doesn't predict PHV
No age bias	Initially requires harder information to obtain
Less clumping of players' maturity	
Equations for every half year	

You can't predict PHV but it can tell you where you are in relation to it.











- University of Bath widget
- Example
- Player DOB 30.12.2009
- Height 196cm
- Weight 82kg
- Dads Height 201cm
- Mums Height 176cm

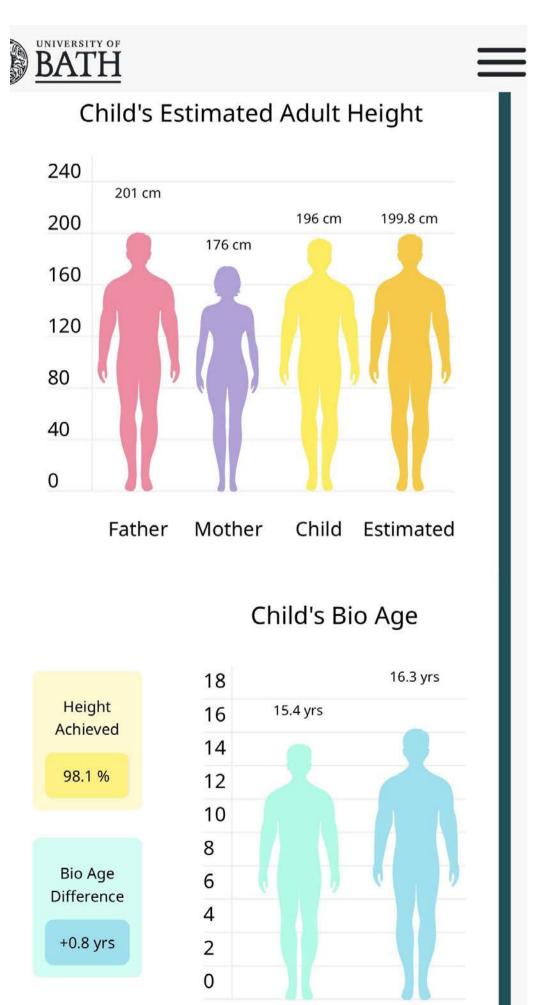


- University of Bath widget
- Example
- Player DOB 30.12.2009
- Height 196cm
- Weight 82kg
- Dads Height 201cm
- Mums Height 176cm











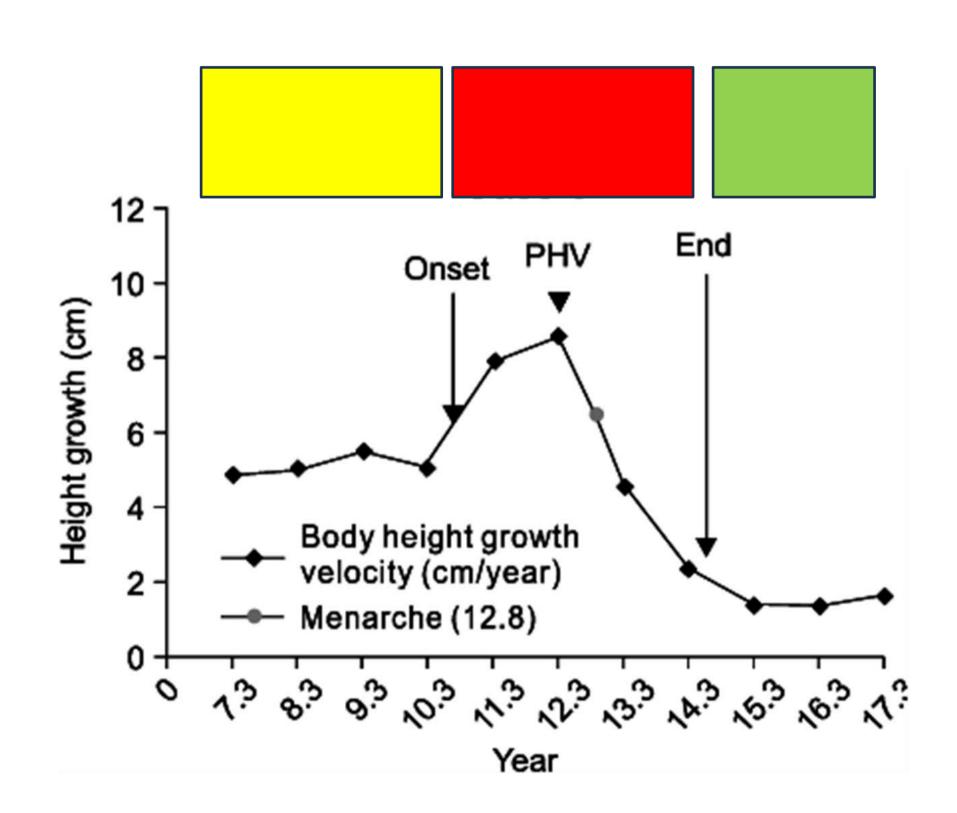




#### Bandwidths

#### Premier League:

- •Pre PHV <88.9%
- •CircA PHV 89 95.9%
- Post PHV >96%



#### Khamis-Roche.

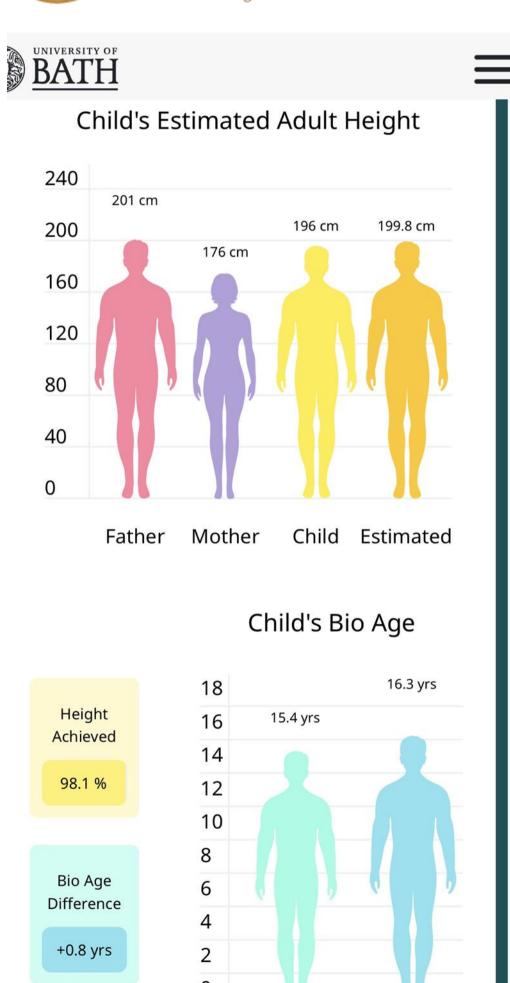
#### Results

- (1) The player is biologically 16.3 yrs so I would not worry if he played an age up.
- The player is going to be very tall (199.8cm) so I will take this into consideration in relation to what positions he plays.
- The player is exiting his pubertal growth spurt so I am less worried about growth related injuries.
- (4) The player had a number of injuries over the last two years. If I look back I will assume there is a link to a high rate of growth and a lack of workload management. Now I know he is exiting the growth spurt potentially I am more confident of progressing the athletic development programme and his workload.















#### Khamis Roche.

- Youth Setting (13 to 17).
- Tips –
- Before doing any estimations have a parent information evening.
- If you have limited time just assess some players (Early and Late developers).
- Share the information to the player and parent in a meeting.
- Give early developers more skills work.
- Watch the workload carefully for players 88% to 94% of adult height. They could have a high growth rate. Also if the have any pain in their heel, knee and hips.







## Coaching Tip







#### **Coaching Tip**

- Situation Young player (91% of adult height High Workload 3 out of 10 pain in his knee).
- **Practical Solution** Ask the player to see a medical person. If the medical person gives the ok to train make some modifications to the workload. Talk to the coaches of the other sports his play with and come up with a shared plan that is linked to the Workload principles.
- Advice Follow the Workload Principles from the planning module. Reduce the amount of the pitch session the player completes 1/3 less. Replace that with skills and mobility work. Don't stretch or over challenge the knee.
- **Result** Hopfully the pain reduces and he return to full training. Continue to communicate with the player and monitor his workload away from the club.

### THE PRINCIPLES OF PLANNING

### ATHLETIC DEVELOPMENT Workload Principles:

- Be aware of the players total workload, not just what they do with yourself. This could include what the player is doing with the club/school/county and any other sports/activities and organisations they may be involved with.
- Provide guidance and support to players who are over trained and under trained.
- Be aware of spikes in the players workloads. This can increase the risk of injury.
- Taper the players workload in the lead into important games as this may help optimise performance.

- Avoid:
  - Completing two high intensity activities in the one day.
  - Playing two full games within 60 hours.
  - Completing high intensity activities on two consecutive days.
- Encourage a minimum of one day off from structured activity per week.
- Help players to understand these workload principles and encourage them to communicate with the coach.

- Encourage involvement in a variety of activities/sports. As the player gets older, the number of activities will decrease. Coaches should work together to manage activity across different sports/teams using these workload priciples.
- Encourage a minimum of 1 rest day from structured training per week.
- Total hours of organised sports (training, practicing, competition, etc.) per week should be less than or equal to a child's age in years.
- Encourage windows and opportunities for unstructured free play activities during the players week.
- guidance for players aged 12 and above
- guidance for players aged 11 and below

# PRACTICAL EXAMPLES.

# INTERESTING RESEARCH.







Access through your institution

Purchase PDF

### Physical, Technical, Tactical & Psychology of Sport and Exercise Psychological, Wateration develop

## and self-regulation in male professional academy soccer players: A test of the underdog hypothesis

```
Sean P. Cumming <sup>a</sup> ⋈, Chris Searle <sup>a</sup> ⋈,

Janie K. Hemsley <sup>a</sup> ⋈, Finlay Haswell <sup>a</sup> ⋈,

Hannah Edwards <sup>a</sup> ⋈, Sam Scott <sup>b</sup> ⋈, Aleks Gross <sup>b</sup> ⋈,

Desmond Ryan <sup>c</sup> ⋈, Jeff Lewis <sup>e</sup> ⋈, Paul White <sup>d</sup> ⋈,

Andrew Cain <sup>d</sup> ⋈, Siobhan B. Mitchell <sup>a</sup> ⋈ ⋈,

Robert M. Malina <sup>f</sup> ⋈
```





www.ice-education.co.uk

TRAINING, RECRUITMENT AND ADVISORY SERVICES IN SCHOOL SPORT





