

Physical Preparation In Our Coaching Practice



Question???

**Do we Truly Understand where are
our athletes now??**

**What abilities are they bringing to the
table??**



**What are their progressive destinations?
...relative to their maturation stage?**

**What is the systematic, sequential,
progressive journey for the individual
athlete?**

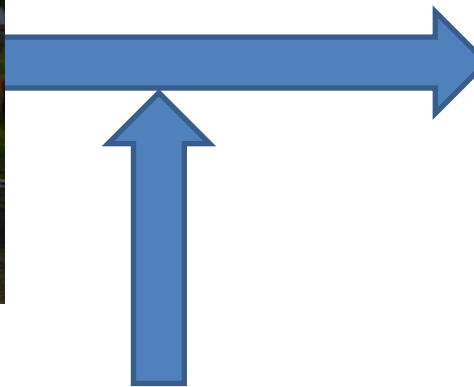
**...eradicating their limitations to future success –
Physical, Technical, Tactical, Psychological**



Interesting Fact

- 627 255 kids between the age of 10 and 19 (Scottish Censuses data 2011) of which 137 996 (sport Scotland participation Data) are involved in athletics approx. 22%.
- These are our future High performance athletes our 2020 (13.5 approx.) and 2024 (9.5 approx.) athletes are in the system already and we are interacting with them
- Are we providing them with the best possible development opportunities?????

I asked if we truly understood
where they now??



What is really going on?

Are we sure that we know?

Is it more than 'Distance Run', 'Heart Rates', Speeds attained? The production of power?

Do we see it? Do we understand it?



Mechanical load forms the basis for performance enhancement:

Acceleration / Deceleration

Agility (Stopping; Re-Starting; Change of Direction)

Endured Agility and Acceleration / Deceleration

Jumping / Landing



**But It is this mechanical load that creates
the injury scenario:**

Limited movement pattern / sequence.

Compensatory movements.

Change of muscle and joint tasks.

Inefficiency – micro-trauma.



What is Physical Competence?

Physical competence describes the presence of underpinning movement efficiency necessary to allow for the execution of complex sports specific skills



TM

This is what we saw

Poor Landing
(Shock Absorption)

Potential Ankle, Knee and Hip
injuries

Reduced Agility (Eccentric
Strength)

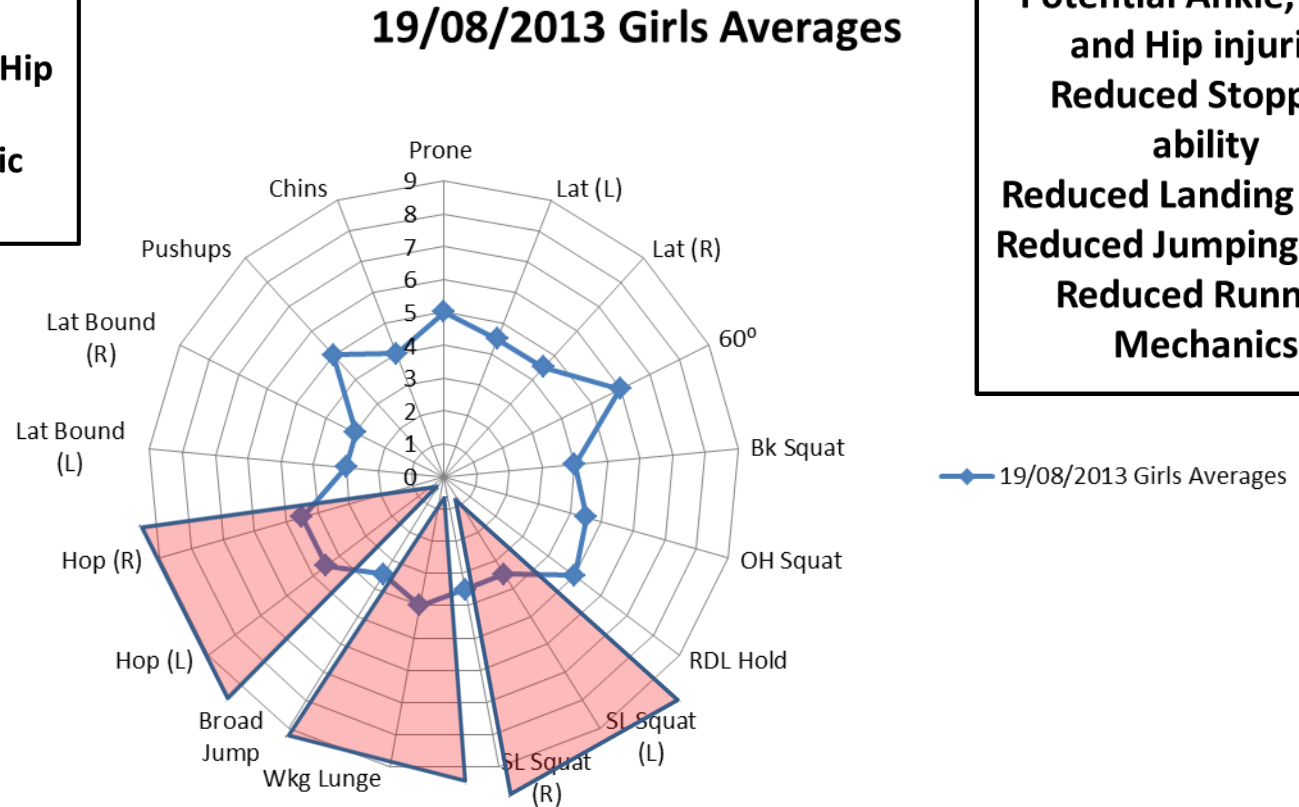
Poor Single Leg Squat

Potential Ankle, Knee
and Hip injuries

Reduced Stopping
ability

Reduced Landing ability
Reduced Jumping ability

Reduced Running
Mechanics



Athletic Ability Assessment

What are the implications?



Restricted movement causes 'energy leaks' - more energy being used to perform a required task = faster fatigue

Body will get 'stiff' in the absence of appropriate stability - it will get the stability from somewhere!!

Tension / stiffness in the body causes premature fatigue



Restricted movements can interfere with technical development

Restricted movements, over time, can curtail a career.



TM

©Movement Dynamics

Question???

**What has changed in the world for us
to be talking about this**



- **Lack of Physical Competence**
WHY?????



P



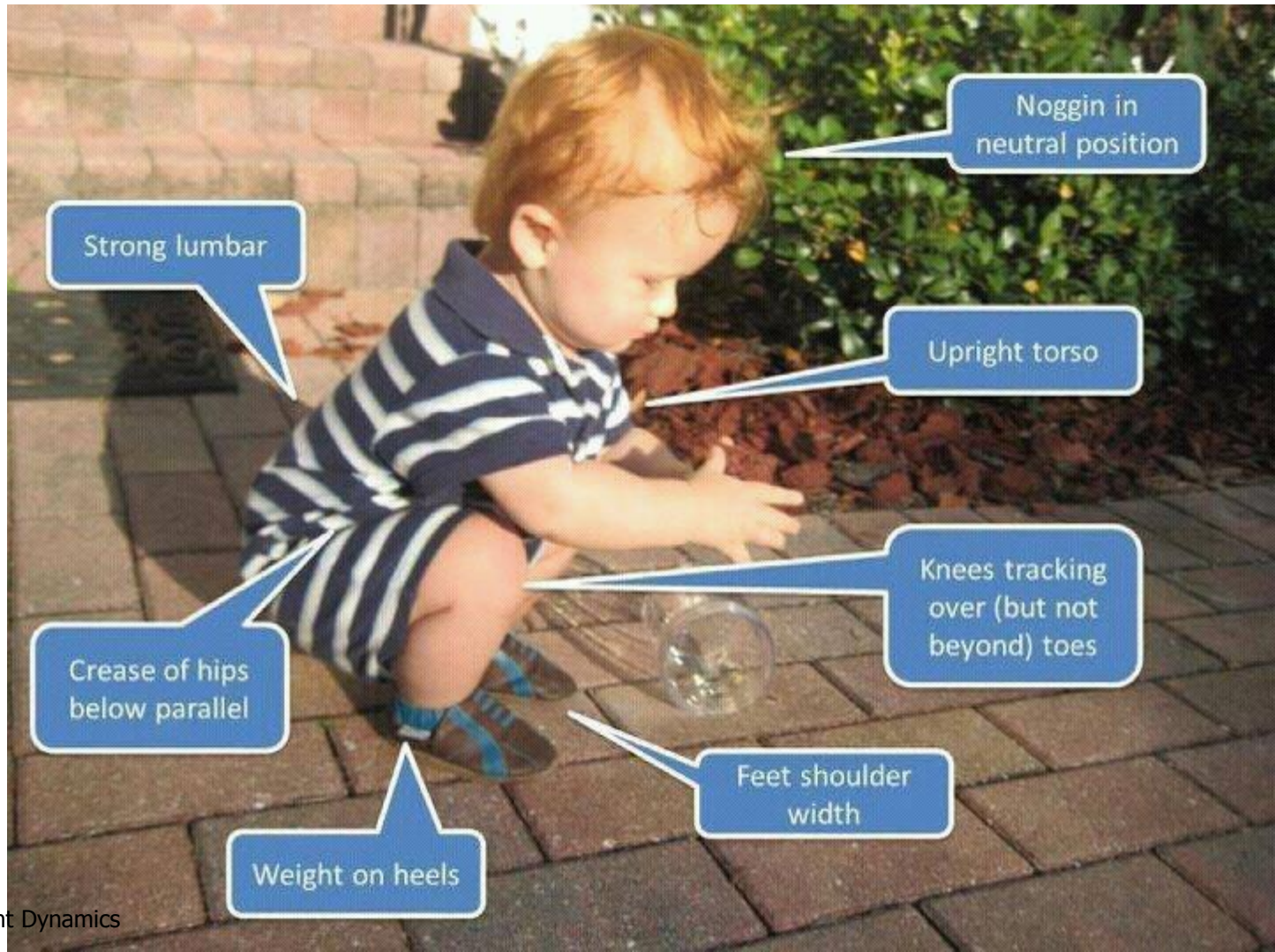
PHOTOS / GETTY IMAGES

I posed Posed this Question

What can / should we do?



Are these **Foundation Movements** difficult to do?



“We concern ourselves with finding some spell, potion, gadget or magic program to give us the 1% edge over our competitors – when getting the basics, the other 99%, right is the actual problem.”



The Journey

Phonetics.....reading and writing

Counting.....numeracy

Foundation movements.....

**Are the cornerstone of the journey to
Physical Competence**

**And Physical Competence is the corner
stone of absorbing mechanical load**

And we looked at

Some Thoughts on the Journey



**Competence in Squatting, Lunging,
Pushing, Pulling, Bracing, Rotating,
Bending through the optimal range**

“With precision, style and grace”

**Competence in all these
movements, in all planes, at all
speeds, in all joints.**

**Improved Body Awareness,
Proprioception, Balance,
Coordination in an extensive
movement vocabulary.**

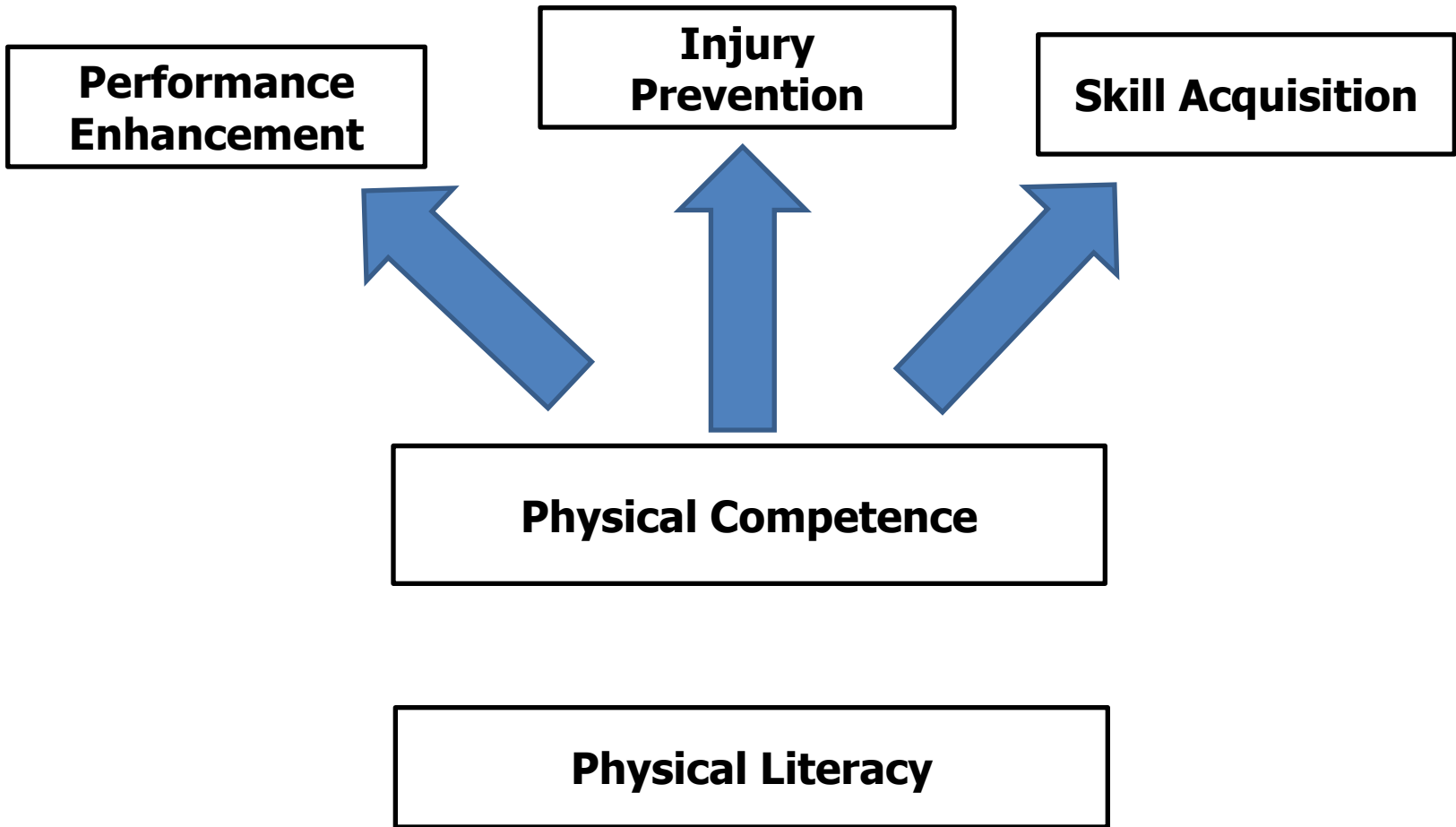
High Performance Sport depends on:

‘What has gone before’

...as it journeys towards:

‘What is yet to come’.





We discussed some thoughts on Delivery

Give them movement 'puzzles' to answer.

Think – 'Guided Discovery'

Think:

Static to Dynamic

Slow to Fast

Simple to Complex

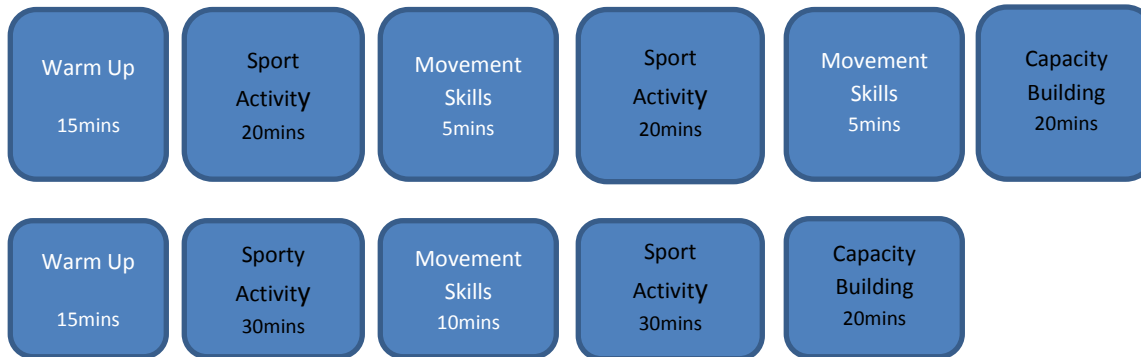
Unloaded to Loaded

And we Challenged Traditional Training Structure

JNR's



Youth



Senior



Types of Modules

Warm Up

Activation; Range; Coordination
Landing

Bracing Module

Horizontal; Vertical; Static; Dynamic

Upper Body Module

Pushing; Pulling; Bending, Twisting:
Rotating

Flexibility Module

Static; Dynamic

...and mixtures of each



We should be striving for Repeatable Movement Efficiency !

**Every second, minute, hour, week,
phase, cycle, year.**

The Journey

The integration of what you **simply must do** and what you **would like to do.**



So my Question to you now is
what has changed

1. With your coaching practice
2. Within Scottish Athletics
3. The Scottish Sporting Landscape



Your Practice

What's Change for you

Do you think differently

What's changes in your sessions



TM

©Movement Dynamics

Scottish Athletics



TM

©Movement Dynamics

**Event Specific
Qualifications**

Planning IV

- Tapering / Pre-Competition Preparation / Priming
- Monitor & Evaluation
- Planning Behaviours
- Deliver Nationally (1/2 days - 1 day)

Athlete Development & Physical IV

- Introduction to S & C
- Incremental & Prescriptive Loads
- Introduction to Olympic Lifts
- (2-4 days) Nationally

Technical Development IV

- Performance Analysis
- KPDs & KPIs for Events
- Invitation Only / Performance Coach Guesting

Technical Development II & III

- Event Development (II)
- Technical Models (event) (II)
- Understand Physical & Technical Competencies (II)
- Performance Foundations (III)
- KPDs / KPIs for Event (III)
- 2 x 1 Days Nationally p.a.

Athlete Development & Physical II (2 days) and III (2-4 days)

- Athletic Development/Physical Prep course (II)
- Assessing Physical Competencies (II)
- Fixing Broken Movements (tech and physical) (II)
- Using Movement Dynamics Resource (II)
- Introducing Load / Resistance to Movement (III)
- Comfort Loads (III)

Planning II & III

- Mesocycle (II)
- Macrocycle (II)
- Regional Delivery
- ½ Day
- NGB Staff

**Athletics Coach
(Event Group)**

Technical Development I

- Beginner / Event group
- Basic Technical Models
- Delivered by Event Group
- 3 x 1 Days Regionally p.a.

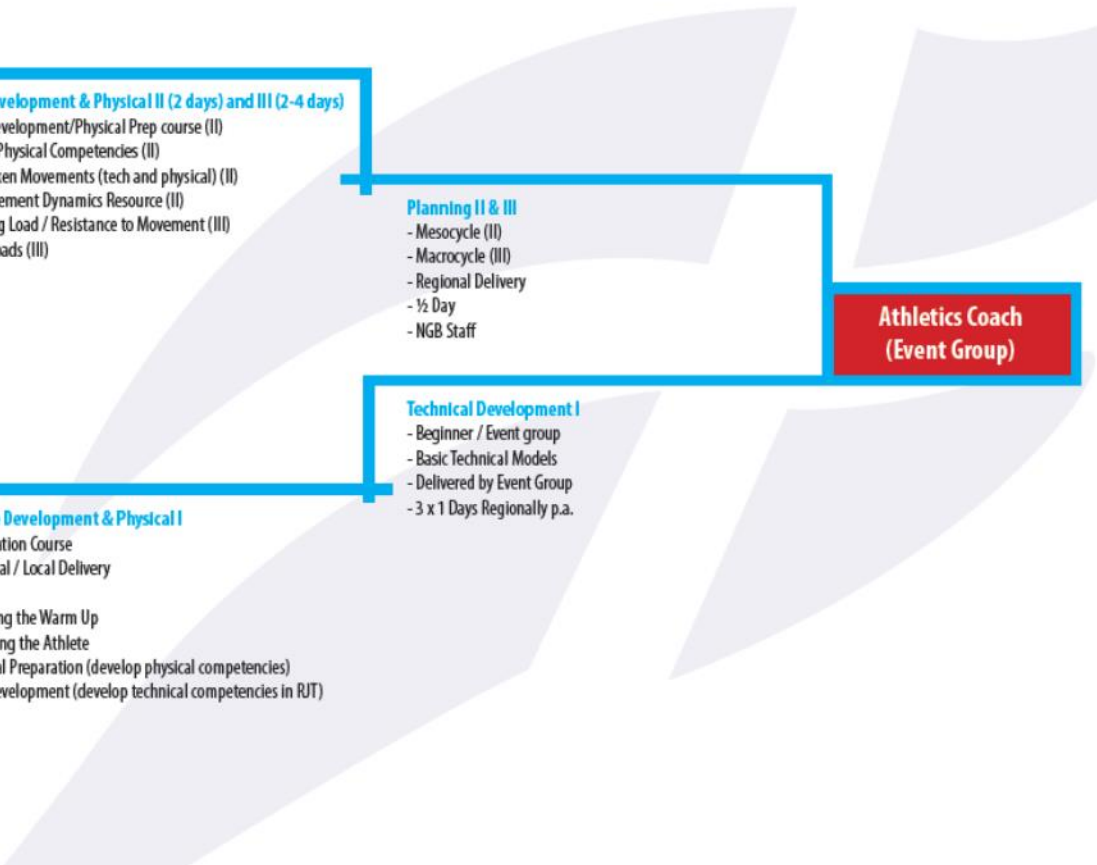
Athlete Development & Physical I

- Foundation Course
- Regional / Local Delivery
- 2 Days
- Coaching the Warm Up
- Assessing the Athlete
- Physical Preparation (develop physical competencies)
- Skill Development (develop technical competencies in RIT)

Planning I

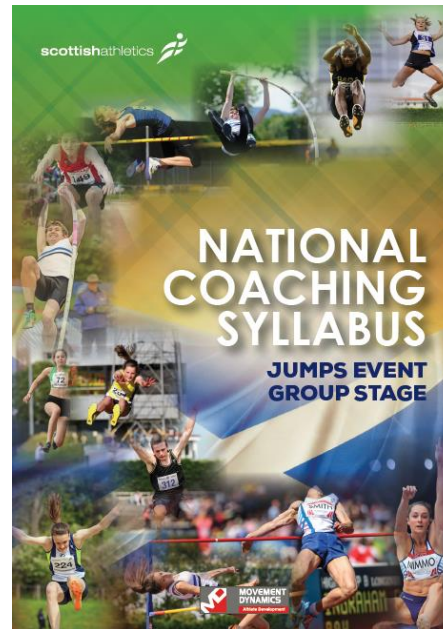
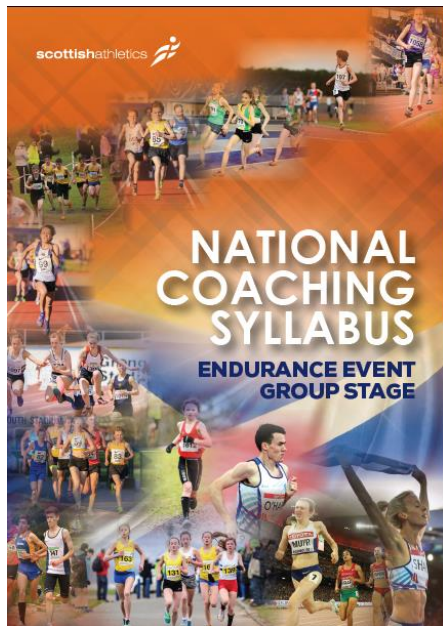
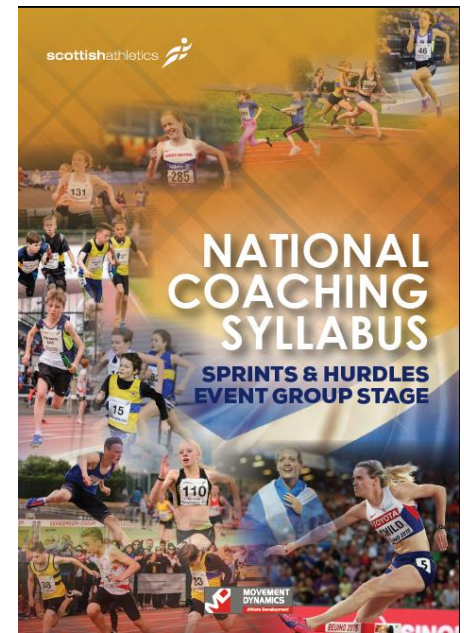
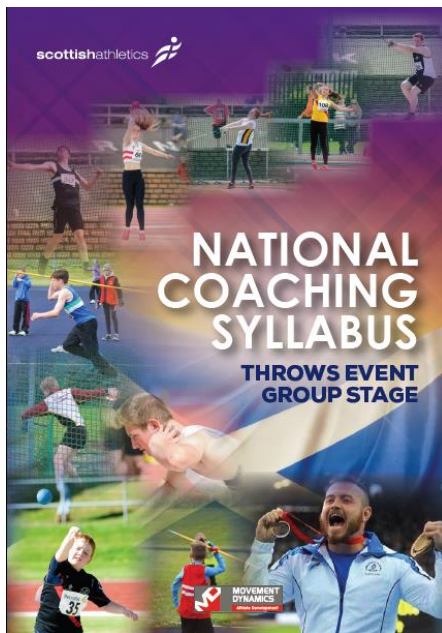
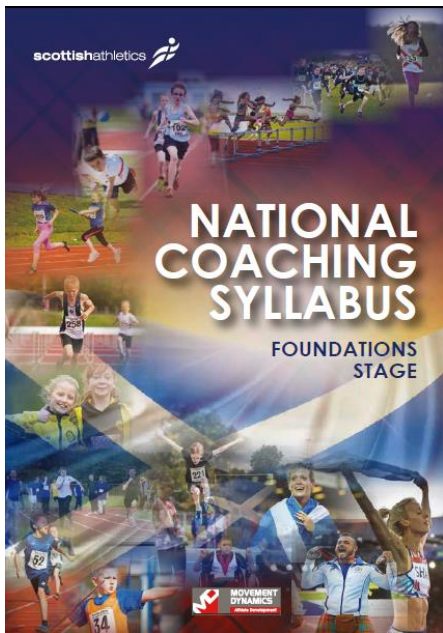
- Microcycle/In-session
- Regional delivery
- ½ Day
- NGB staff delivery

**Coaching
Assistant**



- **Athletic Development and Physical Preparation I**
- **Athletic Development and Physical Preparation II**
- **Athletic Development and Physical Preparation III**
- **Athletic Development and Physical Preparation IV**





Physical Competency Standards for Athletics



	STAGE 1 (Indicative 8-10yrs)	STAGE 2 (Indicative 10-12 yrs)	STAGE 3 (Indicative 12-14 yrs)	STAGE 4 (Indicative 14-17 yrs)
SQUAT	Squat - arms in front (Efficiency)	Squat - 10 reps (arms behind head) Single Leg Squat (90°) (Efficiency - each leg) Overhead Squat (Efficiency)	Loaded Squat - (10 reps) (25% BW) Single Leg Squat - Hold for 3 secs (Low position - Thighs parallel) Overhead Squat - 10 reps	Loaded Squat - (10 reps) (50% BW) Single Leg Box Squat - 5 reps (Low position - Thighs parallel) Overhead Squat - 25% BW (Efficiency)
LUNGE	Lunge - Forward and Return (Efficiency)	Lunge - End of year 1 - Forward & Return (5 reps each leg) - End of year 2 - Walking Lunge (10m)	Overhead Lunge - End of year 1 - Forward & Return (5 reps each leg) - End of year 2 - OH Walking Lunge (10m)	OH Walking Lunge - 25% BW (10m)
BRACE	Lateral Brace - Forearm (Level 1) - 25s	Lateral Brace - Hand (Level 2) - 45s	Brace (Level 2) - Lateral - Hand (45s) - 60° (60s) - Trunk Extension (60s) - Prone - 4 point hands (60s)	Brace (Level 3) - Lateral - Hand (70s) - 60° (90s) - Trunk Extension (90s) - Prone - 4 point hands (90s)
PUSH/PULL	Push Up - End of year 1 - Efficiency - End of year 2 - 5 reps Lying Pull Up - End of year 1 - Efficiency - End of year 2 - 5 reps	Push up (Level 2) - 10 reps Chin Up End of year 1 - ≥ 1 rep (Efficiency) End of year 2 - 5 reps	Push up (Level 3) - 15 reps Chin Ups (Narrow Grip) - 5 reps Wide grip (Efficiency)	Push Up (Level 4) - 30 reps Chin Ups (Level 3) - Narrow Grip - 10 reps - Wide Grip - 5 reps
HINGE		Hinge (Reverse deadlift) Level 2 - Lower to mid-Shin and return (Efficiency)	Hinge (Reverse deadlift) Level 3 - Lower to floor and return - 5 reps	Hinge (Reverse deadlift) Level 3 - Lower to floor and return 5 reps (40% BW)
LANDING	Landing - Double to double (60cm) (Efficiency)	Landing - Double to Single (60cm) - Single to Single (60cm) - Lateral Step & Stick (Efficiency)	Landing - Single to single (100cm) - Lateral hop & Stick (Efficiency) - 5 Jumps (Efficiency)	Landing - Slalom Reactive Hops (L&R) (>10 reps) - 5 hops (>11.00m)
NOTES	Assess the movement efficiency Athletes must achieve Desirable (Executing all 5 points)	Assess movement consistency as well as efficiency Athletes must achieve Desirable (Executing all 5 points)	Assess movement consistency as well as efficiency Athletes must achieve Desirable (Executing all 5 points)	Assess movement consistency as well as efficiency Athletes must achieve Desirable (Executing all 5 points)

Event Group PCA (Additional Event Group Specific assessments to be carried out in conjunction with Stages 3 and 4)

EVENT GROUP	Sprints & Hurdles	Jumps	Throws	Endurance
	Wall 'A' Stance - Level 1 (Static and Dynamic) Thomas Test 1 (L&R) - Thigh Angle 5° Below horizontal Thomas Test 2 (L&R) - Shin Angle 80-90° Hamstring > 90° Ankle Range (L & R) > 12cm	Wall 'A' Stance - Level 1 (Static and Dynamic) Thomas Test 1 (L&R) - Thigh Angle 5° Below horizontal Thomas Test 2 (L&R) - Shin Angle 80-90° Hamstring > 90° Ankle Range (L & R) > 12cm Hanging Raises - Straight Leg	Medicine Ball Rebound Throws ≥20 seconds Standing Shoulder External Rotation (Vertical) Shoulder Lift Off > 20cm Bench Pull - Loaded (Efficiency) Mini-Hurdle Hops - Square Pattern (Efficiency)	Wall 'A' Stance - Level 1 (Static and Dynamic) Thomas Test 1 (L&R) - Thigh Angle 5° Below horizontal Thomas Test 2 (L&R) - Shin Angle 80-90° Hamstring > 90° Ankle Range (L & R) > 12cm

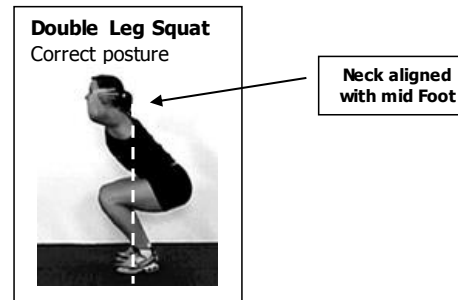
Physical Competency Assessment – Observation Aid, Stage 2

Double Leg Squat – Bodyweight – Hands behind Head (Movement consistency)

Exercise	Desirable	Above Average	Average	Below Average	Poor
	5	4	3	2	1
Double Leg Squat	See Main 5 scoring points				
Double Leg Squat – 10 Reps	10 reps	9-8	7-6	5-4	Less than 4

Main Coaching Points

- Bare Feet
- Athlete slowly sits back into a squat position with the Thighs **parallel** to the floor.
- Head Up, Chest Up, Straight Back, Butt Out.
- Heels must stay in contact with the ground at all times.
- Trunk stays as upright as possible with broomstick or Neck aligned above Toes.
- Check the depth of the squat and the quality of the posture.



Main 5 Scoring Points Executing all 5 points scores 5.	Competent
1. Depth	(Y/N)
2. Ankle, Knee, Hip alignment (Knees don't collapse in or Feet don't turn or collapse)	(Y/N)
3. Equal stance on both legs (Hips don't swing to favour one side)	(Y/N)
4. Heels down	(Y/N)
5. Trunk in proper alignment. Use the Wall Chart to assess or look for Trunk angle parallel to Shins	(Y/N)
Comments:	

Scottish Landscape



**CRICKET
SCOTLAND**

Skills Matrix – Appendix

Cricket Scotland Pathway	Introductory Programmes	Junior Club and School Programmes	Area and Regional Development Programmes	Academy	Under 19 Squad	Senior National Squad and Pro Teams
Rough Chronological Ages	5-11	12-15	13-16	14-17	18-19	20+
Participation	Learner, Kwik Cricket, U11 Hardball	U13 and U15 Hardball in school and club environment	U14 and U16 area representative	U15 and U18 regional, and Scotland U15 & U17 representative	Scotland U19 representative	Pro Series Franchise and Scotland senior representative
Marker Points			13yo / Rep entry	15yo / Academy entry	19yo	
Batting	<p>Hands together</p> <p>Comfortable side-on stance</p> <p>Watch ball</p> <p>Move towards ball</p> <p>Stable base</p> <p>Run with pads</p> <p>Slide bat when running</p> <p>Turn both ways</p>	<p>Shoulders to target</p> <p>Momentum through body into shot</p> <p>Hands to target</p> <p>Stable base</p> <p>Horizontal and vertical shots</p> <p>Movement backwards into line</p>	<p>Balanced and comfortable set up</p> <p>Decisive movement towards ball</p> <p>Coordinated movements to enable clean contact</p>	<p>Developing understanding of scoring options</p> <p>Developing role awareness</p> <p>Consistent set up</p> <p>No tension in set up promoting fluency of movement</p> <p>Wrists cocked in backswing</p>	<p>Understand and execute own scoring options</p> <p>Understand role</p> <p>Bat long periods of time</p> <p>Move down the wicket</p> <p>Quickness onto back foot</p> <p>Speed between the wickets</p> <p>Turn quickly</p> <p>Sound judgement of line and shape – play late and leave well</p> <p>Presence at crease – positive body language</p>	<p>Hit ball out of the park</p> <p>Cope with bowling at 90mph</p> <p>Hit ball 360</p> <p>Know and execute boundary options</p> <p>Three sweep options</p> <p>Move forward, back and laterally against spin</p>
Pace Bowling	<p>Overarm with delivery arm straight</p> <p>Everything towards target</p> <p>Seam grip</p> <p>Hips and shoulders</p>	<p>Particular attention required around PHV</p> <p>Approach building momentum</p> <p>Bowl fast</p> <p>Awareness of grip variations for swing and</p>	<p>Particular attention required around PHV</p> <p>Deliver stock ball</p> <p>Awareness of variations</p> <p>Spells of 5-6 overs</p> <p>30 overs/week</p> <p>All of the above with a safe</p>	<p>Particular attention required around PHV</p> <p>Consistent repeatable safe and legal action</p> <p>Deliver stock ball</p> <p>Developing bouncer, yorker and slower ball</p>	<p>4 days bowling in 7</p> <p>2 days consecutive</p> <p>Spells of 7-8 overs</p> <p>40 overs/week</p> <p>Deliver stock ball, bouncer, yorker and slower ball</p>	<p>Bowl at 80-90mph</p> <p>60-70 overs/week</p> <p>Deliver stock ball, bouncer, yorker and slower ball with repeatable excellence</p> <p>Swing or seam both ways consistently with bounce</p>

The Physical Journey - Overview

Coach Education Terms	Early	Basic	Enhanced	Talent Development	Performance	
Overall Ethos	Encourage enjoyment, discovery, self-improvement and athleticism					
Cricket Scotland Pathway	Introductory Programmes	Junior Club and School Programmes	Area and Regional Development Programmes	Academy	Under 19	Senior National Squad and Pro Teams
Rough Chronological Ages	5-11	12-15	13-16	14-17	18-19	20+
Participation	Learner, Kwik Cricket, U11 Hardball	U13 and U15 Hardball in club and school environment	U14 and U16 Area representative	Regional U15 and U18, and Scotland U15 & U17 representative	Scotland U19 representative	Pro Series Franchise and Scotland senior representative
Marker Points			13yo / Rep entry	15yo / Academy entry	19yo / U19 exit	
Physical Competence / Flexibility	Move body through all basic movements full range with control	Consistently move the body through all basic movements full range with control	Complexity increases		Cricket/role specific	Performance focused
Strength / Power			Moving towards cricket bias			
			Increase focus on rotation			
			Ankle, hip and shoulder mobility prioritised			
			Intro to lifting	Starting to move towards role specific strength work	Intention to produce force	
			Exposure to strength training	No performance outcome measures	Lifting for performance	
			COMPETENCY BASED		Performance outcome measures	
Capacity	Get moving	Develop the engine	Intro to RSA	Moving towards role specific aerobic / RSA		Heavily RSA focused with high aerobic base
			Related to intro to lifting	Fast bowlers 40-50 overs/week		Performance outcome measures through CS/ICC senior testing battery
				Increasing overall load – starting to specialise		
Speed / COD	Movement efficiency	Movement efficiency and consistency	Acc/dec over short distances		Role specific	Fast bowlers 60-70 overs/week
	Intro to jumping, landing & running postures	Continue jumping, landing & running	Transitional/MD		Performance outcome measures in acceleration and COD	Ability to cope with load of being full time cricketer
			Speed cut/step cut/power cut			

Introductory Programmes

The aims of this stage are to introduce the children to as wide a range of cricketing experiences as possible, in a fun environment. Generally the participants receive one to two sessions of up to one hour per week. Those responsible for delivery include parents, school teachers and club coaches. Support for these deliverers comes in the form of an introductory workshop, sample session plans, a [video/booklet](#) resource and the level one assessment tool, helping the coaches to meet the stage aims and prepare the children for further participation.

	Desired Outcomes	Methods of Delivery	Resources
Physical Competence / Flexibility	On progressing from this stage athletes will have been exposed to as many forms of movement patterns as possible, and to the Level 1 Assessment in an informal setting	Embedded in cricket sessions	Workshop 1
Strength / Power		Warm up, warm down and movement breaks	Level 1 Assessment Tools Sample session plans from Coach Education Courses
Capacity	No assessment; concentration and technical and tactical skill execution over 60 min		5-in-5 or other video or online resource?
Speed / COD	Demonstrate good movement efficiency and sound locomotive skills	Intro to jumping, landing & running postures Modified games	

Junior Club and School Programmes

The aims of this stage are to improve the basic cricketing skills and provide competitive opportunities. The children are introduced to the laws, basic tactics and strategies, and given opportunities to experiment and discover. As the children begin to spend more time playing cricket, it is important that they continue to develop a wide and deep movement vocabulary, and eliminate all limitations to future progress. This is achieved by ensuring that the foundation movements are coached in-session alongside the cricketing skills, and by encouraging the children to continue to participate in multiple sports. Deliverers and support mechanisms are generally the same as in the first stage. [A second, slightly more advanced level one assessment \(Level 1A\) is included at this stage, to be used informally or formally where appropriate.](#)

	Desired Outcomes	Methods of Delivery	Resources
Physical Competence / Flexibility	On progressing from this stage athletes will have been exposed to as many forms of movement patterns as possible, and a score of xx for efficiency and consistency on all the movements in the Level 1 and 1A	Embedded in cricket sessions	Workshop 1
Strength / Power		Warm up, warm down and movement breaks	Level 1 Assessment Tools Sample session plans from Coach Education Courses



TM

©Movement Dynamics

Athletic Ability Assessments Level 1 and 1A Rationale and Scoring

When operating in the performance pathway, young athletes are setting out on their quest for excellence; they are being exposed to competitive opportunities, deliberate practice which is becoming individualised and skill-specific, and are developing their athletic prowess. In order to cope with the demands placed on them in this environment, and thrive in it, it is vital that the foundations of good quality movement are in place beforehand. The level one athletic ability assessments should be used informally or formally in introductory and junior club and school programmes, to ensure the young athletes' readiness for the performance pathway. The movements have been selected as they assess in isolation each of the fundamental building blocks of all subsequent movement, and the ability to jump and land.

Level 1

Exercise	Selection Rationale	Scoring Points				
		5	4	3	2	1
Prone Hold on Forearms <i>30 sec</i>	Isometric hold linking upper body, trunk and lower body, assessing scapular positioning under load and hip stability and control under tension; stabilising and controlling trunk integrity is a cornerstone to all subsequent actions in sport and movement	30 sec	29-23 sec	22-16 sec	15-10 sec	<10 sec
Lateral Hold on Forearm Left & Right <i>25 sec each side</i>	Lateral stabilisation illustrates ability of lateral structures to control bodyweight with correct trunk, hip and shoulder position – particularly important for controlling bodyweight in multiple directions	25 sec	24-18 sec	17-11 sec	10-5 sec	<5 sec
Bodyweight Squat Arms Ahead <i>3 reps</i>	Squat movement with arms ahead assesses strength of upper body to maintain this position along with thoracic spine mobility, while also assessing lower body strength and mobility	<ul style="list-style-type: none"> • Depth – thighs parallel to floor • Ankle, knee and hip alignment • Equal stance on both legs • Heels on floor • Trunk aligned with shins 				
Bodyweight Lunge & Return Left & Right <i>3 reps each side</i>	Lunge movements involve hip mobility, trunk stability, strength and motor control; the interaction of these components can highlight dysfunctional patterns	<ul style="list-style-type: none"> • Step over opposite knee without collapse at waist (waistband level) • Step over opposite knee without support leg flexing • Step over opposite knee without shin of trailing leg turning out or in during pull-through • Ankle, knee and hip aligned at landing (shin remains vertical) • Land and return smoothly and in balance 				
Double Leg Jump & Land <i>30cm</i>	The ability to maintain balance and control during both the take-off and landing phases is important for developing acceleration and	<ul style="list-style-type: none"> • Ankle, knee and hip alignment • Bend at ankles, knees and hips • Equal stance on both legs • Trunk aligned with shins 				

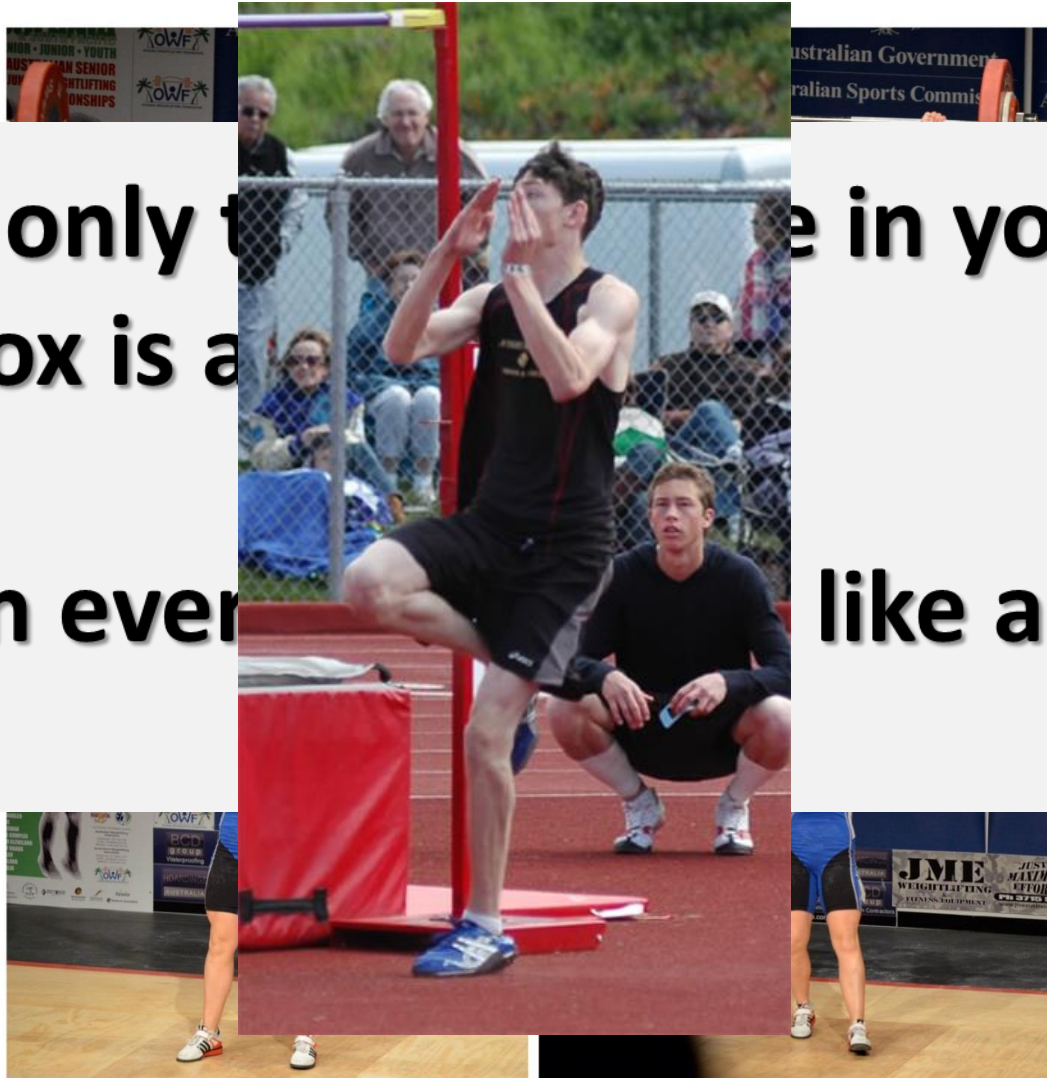
sportscotland institute of sport

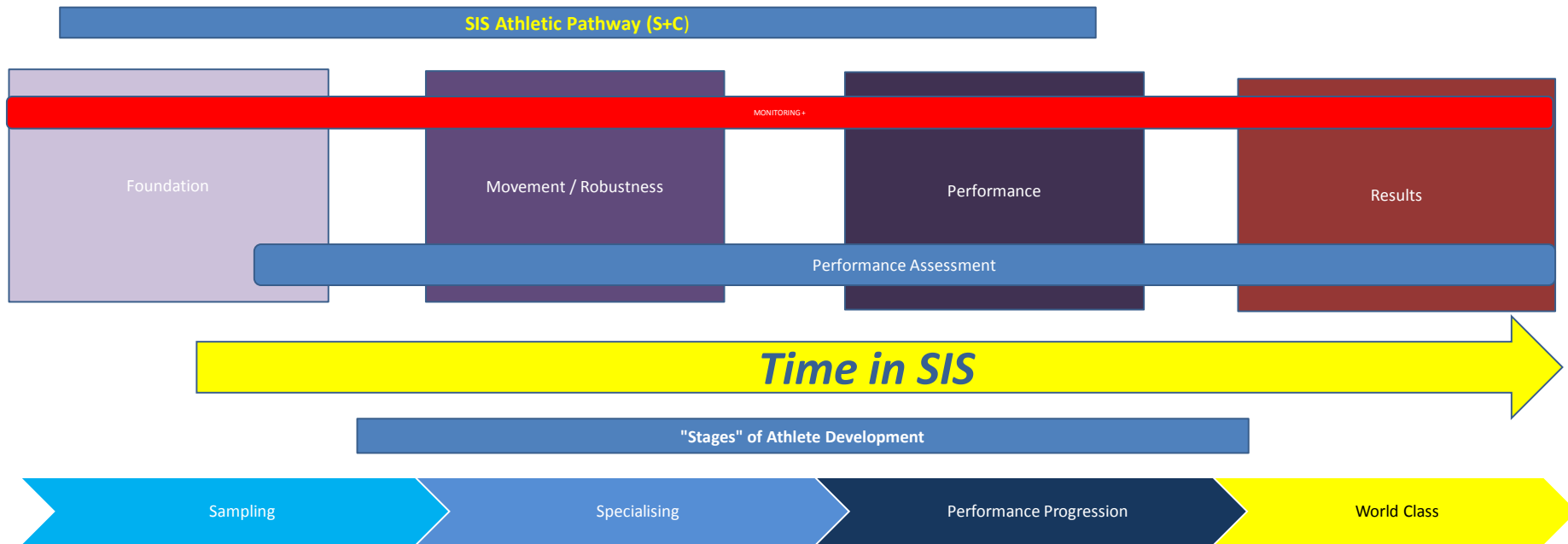


We are on our Own Journey

If the only tool
in your toolbox is a
nail
...then ever

...then ever
like a nail.





ATHLETE ABILITY ASSESSMENT

FOUNDATION LEVEL

Manual for assessment
set-up and protocols



Providing high performance expertise
to sport and athletes in Scotland


sportscotland
institute of sport
high performance expertise



So 2 years ago I and in turn you Challenged the Sport

The Sport and Indeed a number of sports have accepted the challenge and responded in strong and positive ways



TM

©Movement Dynamics

So I leave you with this Challenge

What are you going to do??

You are being provided with the tools
and opportunities to affect change



If I come back 2 years from now
What will I see???

