

Developing and Supporting the Regional Age Group Swimmer

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THE YOUTH PHYSICAL DEVELOPMENT MODEL: A New Approach to Long – Term Athletic Development

Lindsay Dunn,
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Key Considerations for Athlete Development

Youth Physical Development Model (Rhodri Lloyd and Jon Oliver)

- Alternative to previous LTAD models which have lacked clear supporting evidence
- Encompasses athletic development from early childhood (2 years of age) up to adulthood (21+ years of age)
- Comprehensive approach to the development of females and males respectively
- Overview of physical development, whilst identifying when and why the training of each fitness component should be undertaken

YOUTH PHYSICAL DEVELOPMENT (YPD) MODEL FOR FEMALES																					
CHRONOLOGICAL AGE (YEARS)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21+	
AGE PERIODS	EARLY CHILDHOOD			MIDDLE CHILDHOOD					ADOLESCENCE									ADULTHOOD			
GROWTH RATE	RAPID GROWTH			↔		STEADY GROWTH			↔		ADOLESCENT SPURT					↔		DECLINE IN GROWTH RATE			
MATURATIONAL STATUS	YEARS PRE-PHV								←		PHV		→		YEARS POST-PHV						
TRAINING ADAPTATION	PREDOMINANTLY NEURAL (AGE-RELATED)										↔		COMBINATION OF NEURAL AND HORMONAL (MATURITY-RELATED)								
PHYSICAL QUALITIES	FMS		FMS			FMS		FMS													
	SSS		SSS			SSS		SSS													
	Mobility		Mobility					Mobility													
	Agility		Agility					Agility						Agility							
	Speed		Speed					Speed						Speed							
	Power		Power					Power						Power							
	Strength		Strength					Strength						Strength							
	Hypertrophy					Hypertrophy		Hypertrophy							Hypertrophy						
	Endurance & MC		Endurance & MC							Endurance & MC							Endurance & MC				
TRAINING STRUCTURE	UNSTRUCTURED			LOW STRUCTURE					MODERATE STRUCTURE				HIGH STRUCTURE			VERY HIGH STRUCTURE					

YOUTH PHYSICAL DEVELOPMENT (YPD) MODEL FOR MALES																						
CHRONOLOGICAL AGE (YEARS)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21+		
AGE PERIODS	EARLY CHILDHOOD			MIDDLE CHILDHOOD							ADOLESCENCE							ADULTHOOD				
GROWTH RATE	RAPID GROWTH			↔		STEADY GROWTH					↔		ADOLESCENT SPURT					↔		DECLINE IN GROWTH RATE		
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	Agility		Agility							Agility				Agility								
	Speed		Speed							Speed				Speed								
	Power		Power							Power				Power								
	Strength		Strength							Strength				Strength								
	Hypertrophy										Hypertrophy		Hypertrophy							Hypertrophy		
	Endurance & MC		Endurance & MC									Endurance & MC				Endurance & MC						
TRAINING STRUCTURE	UNSTRUCTURED				LOW STRUCTURE					MODERATE STRUCTURE				HIGH STRUCTURE				VERY HIGH STRUCTURE				

Key Fitness Components

- Fundamental Movement Skills (FMS)
- Sport – Specific Movement Skills (SSS)
- Strength
- Hypertrophy
- Power
- Speed
- Agility
- Mobility
- Endurance and Metabolic Conditioning (MC)



FMS and SSS

- FMS development is essential to ensure mastery of correct movement patterns
- Will facilitate performance of more complex SSS at a later stage
- FMS should be the focus of physical development programmes from early childhood to foster gross motor skills
- Onset of puberty, adolescents can then be introduced to more SSS

Swim England Club Awards



- Launched May 2018
- Aim to improve the technical development of young age group swimmers transitioning from learn to swim programmes into competitive swimming clubs
- Target audience: 7 – 12 years
- Delivery Period: 3 – 4 years

Strength

- Despite previous concerns, now widely accepted that children can participate in strength training
- YPD model suggests that the development of muscular strength should be a priority at all stages of development for males and females
- Research shows close associations between muscular strength and all other fitness components
- Improved performance and reduce injury risk
- Strength training is 'integral' not additional to overall programme

Hypertrophy



- **Emphasis on hypertrophy:**
growth and increase in size of the muscle cells
 - Females 12 years+
 - Males 14 years+
- **Resistance training:**
 - Pre adolescence:
Strength
 - Post adolescence:
Interspersed Strength / Hypertrophy

Power

- Ability to exert a maximal force in as short a time as possible
- Essential for sporting success
- Key period for power development is at onset of adolescence (continues throughout adulthood) due to maturational influences
- Although emphasised after onset of puberty, YPD model suggests some training focus should be given to developing power during the pre pubertal phase

Speed

- Speed development influenced by maturation
- Trainable during adolescence and childhood

Prepubescent Children:

- focus on plyometrics, technical competency, sprint work

Adolescents:

- focus on strength training, plyometrics and sprint training



Agility

- Ability to explosively start, decelerate, change direction and accelerate again whilst maintaining body control and minimising loss of speed
- Lack of research to identify appropriate time frames to develop agility – specific training
- YPD model makes inferences to:
 - ***change of direction speed*** (technique, straight sprinting speed, lower limb strength and anthropometry)
 - ***cognitive function*** (perceptual and decision making processes)

Off the Blocks

COACHING FACTSHEETS

OFF THE BLOCK BACKSTROKE STARTS



LONG WHISTLE WARNINGS

There are two long whistles for backstroke starts: one to enter the water and the second to bring the swimmers to the wall.

"TAKE YOUR MARKS"

Both hands should firmly grip the available handles in the swimmer's preferred position. The feet should be placed under, at, or above the water surface, either level with each other - mandatory when using a foot ledge -, or 'split' one higher than the other. The feet and toes should be placed firmly on the ledge. In pools where there is no foot ledge, the feet and toes should 'grip' the wall or touchpad.

The body should be pulled up and in towards the block with the hips nearly out of the water.



"GO!"

- The 'drive' from the wall should be initiated from the hips by the swimmer feeling they are pushing the wall away.
- As the hands release their grip, the head and shoulders should move forwards as soon as possible ('forwards' as in the intended direction of swimming - i.e. towards the other end of the pool).
- The head, shoulders, body and hips should move diagonally upwards and forwards. The neck and chest should be extended.
- The duration of the push should be as short as possible (indicates greater force).
- The arms should be swung forwards and extended past the head.
- The order of 'drive' is hips, head, hands.
- At the end of the leg drive the body angle should be diagonal and straight.



FLIGHT

- The flight over the water should take the swimmer as far as possible.
- The hips should be raised as high as possible, then, just before the hands and arms enter the water the feet should be raised completely out of the water. This will produce an arched body shape over the water.
- The arms should squeeze the head before the entry.



ENTRY

- The hands, arms, head, shoulders, torso, hips, knees and feet should enter through the same 'hole'.
- A small dolphin kick should be made during the entry of the legs (Hips, head, hands, feet).
- A tight, 'squeezy' streamlining should be held to ensure no loss of speed after the entry.



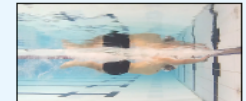
COACHING FACTSHEETS

BREASTSTROKE TURNS



APPROACH

- Turns for breaststroke start quite a distance before the end of each lap. The technique and effort over the 5, 10 or even 15m of swimming ('the approach') can make a significant difference to the ease of the turn and to its speed. A well judged approach can make at least 0.3 - 0.5 seconds difference to a race time. Depending on the pool length and race distance there may be as many as seven turns, so the effects add up.
- The swimmer must 'spot' the wall from at least 5 meters before the finish so that the touch is made with perfect stroke timing. The final stroke takes the hands purposefully onto the wall at almost full extension and with no time-wasting or speed-sapping glide.



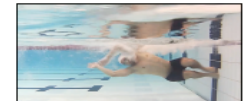
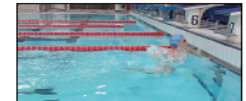
TOUCH

- The hand touch should coordinate with the end of a leg kick to ensure maximum speed 'going into' the wall.
- Both hands should hit the wall simultaneously. They must be separated, i.e. they cannot overlap with one hand on top of the other (otherwise only one hand has 'touched') but they do not need to be at the same height as each other; one could be above the waterline and the other below the waterline. Swimmers 'ready' themselves for the change of direction, so the hands are often at different heights as well as the shoulders being slightly turned at the last moment before the touch.



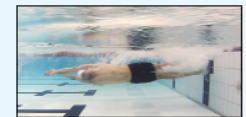
ROTATE & TOUCH AGAIN

- As the hands touch the wall the hips should continue forwards towards the wall as one hand is quickly released (No 'sticking' to the wall and NO resting). The swimmer will turn towards the hand which is released first.
- The elbow of the released side drives backwards and the shoulders reverse direction and turn as the hips continue towards the wall. The swimmer should continue looking forwards towards the wall and take an in-breathe. The head should not be turned sideways or be looking back at this point.
- The second hand releases as the knees are bent and brought up to the chest with the feet close together or slightly overlapping. As the feet are brought towards the wall the arms, head and shoulders of the swimmer are ready to submerge in preparation for the footplant and push.
- The feet should touch at the same time as the 'top' arm enters the water. Both feet should hit the wall at the same time with the toes pointing sideways and the body facing sideways.



PUSH

- As the feet touch the wall the swimmer's upper body should be streamlined with head hidden between stretched out arms. An effective push cannot start until the head and feet are level with each other (at the same depth).
- The push duration should be as short as possible for maximum force.
- The push should rotate the whole body onto the breast with no twisting at the hips.
- The back should be straight and firm throughout the whole of the push phase.
- The push should be horizontal (neither upwards nor downwards) and should take the swimmer underneath the wave which follows them into the wall.



Mobility

- At no stage is mobility ***the main emphasis*** of a training programme
- Mobility development and maintenance essential in all programmes to ensure athlete's are able to achieve ROM for their sports
- Middle childhood (ages 5 – 11 years) most important timeframe to **develop** flexibility and mobility
- Adolescents and adults must **maintain** required levels



Endurance and Metabolic Conditioning

- YPD model proposes to focus on this component as the child approaches adulthood
- At no stage is it seen as the main focus of an individual's training
- Rationale based upon assumption that an athlete will be exposed to skill training and regular competition
- Remarkable levels of endurance not required in all sports (events) and endurance remains trainable in adulthood

Individualising Long Term Athletic Development Programmes

YPD model must be manipulated to address:

- Sex Differences
- Timing and Rate of Maturation
- Training History



Sex Differences

Prepubertal: boys and girls follow similar rates of development in growth and maturation and subsequent progression in all fitness components.

Focus upon: FMS, strength, speed and agility

Adolescent Spurt: clear maturational differences apparent for nearly all fitness components. Males making bigger improvements in all except flexibility.

AS: Girls, 2 years earlier than Boys (about 10 vs 12 years of age)

PHV: Girls, 2 years earlier than Boys (about 12 vs 14 years of age)

Females undergo sex – specific physiological processes, all associated with non contact anterior cruciate ligament injury – should undertake:

- Core Strengthening
- Balance/ Stability Training
- Strength Training
- Plyometrics

Early Versus Late Maturing Athletes

- Highly individual timing of maturation – flexibility with age ranges
- Early maturing athletes – components shifted to the left, more advanced training at an earlier age
- Late maturing athletes – components shifted to the right, later exposure to advanced training when physiologically ready to cope with increased training stimulus
- Must accurately monitor through childhood to establish ‘biological’ age

Initial Training Status

- Training age is a critical consideration irrespective of chronological and biological age
- Defined as the number of years that an athlete has been participating in formalised training
- Athlete approaching adulthood with little exposure to early phases of YPD model should commence with FMS and muscular strength
- Conversely an early maturing athlete displaying exceptional strength, power whilst maintaining technical proficiency can work above their 'predicted' capability level on more advanced components

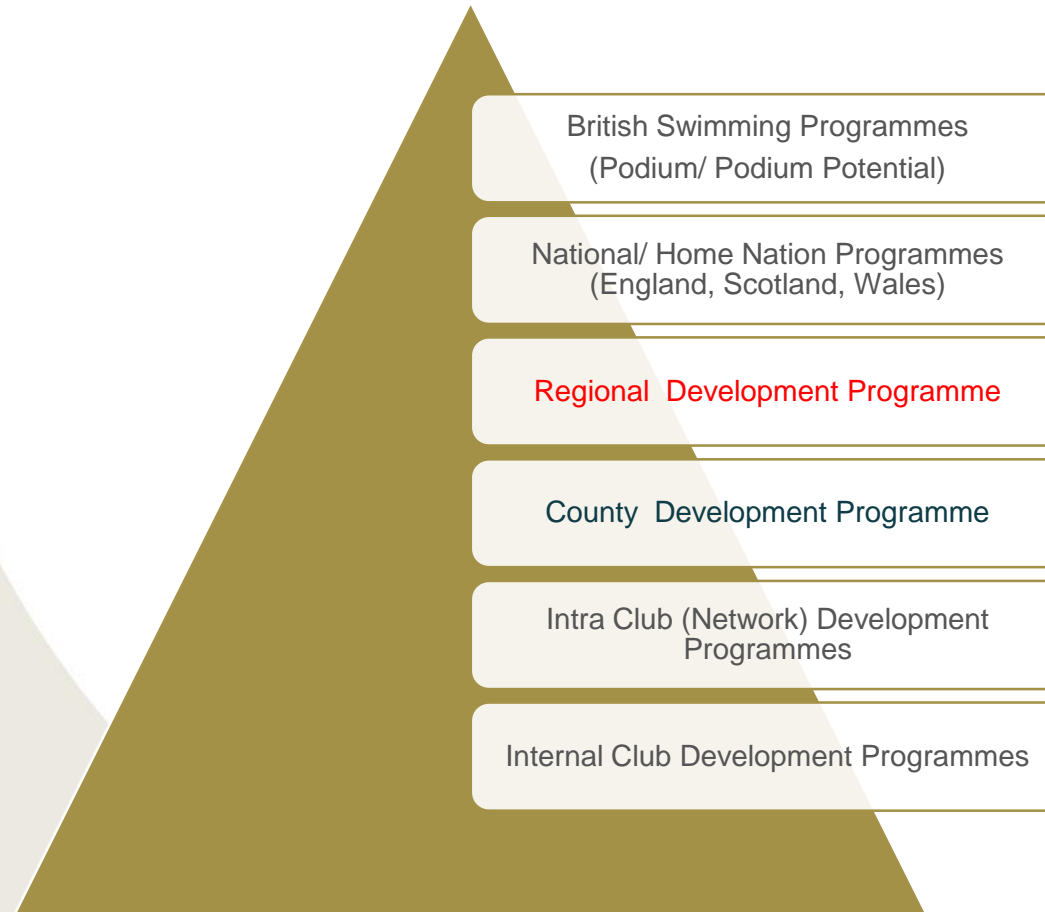
Key Messages ...

- Progression is an 'individual' process – avoid comparing swimmers with their peers ...
- Allow coaches to direct and explain the need for flexibility within squad structures to meet the needs of athletes of differing sexes, 'biological' ages and 'training' ages. Some swimmers may be prescribed different training programmes within the same squad – individualisation is the key!
- Dryland activities are critical to the success of young swimmers (pre and post pool, land training) – needs to start earlier and be 'integral' to the overall programme.
- <https://offtheblocks.info>
 - Send email and you will receive a username within a few days

THE DEVELOPMENT PROGRAMME PATHWAY: The Regional Development Programme

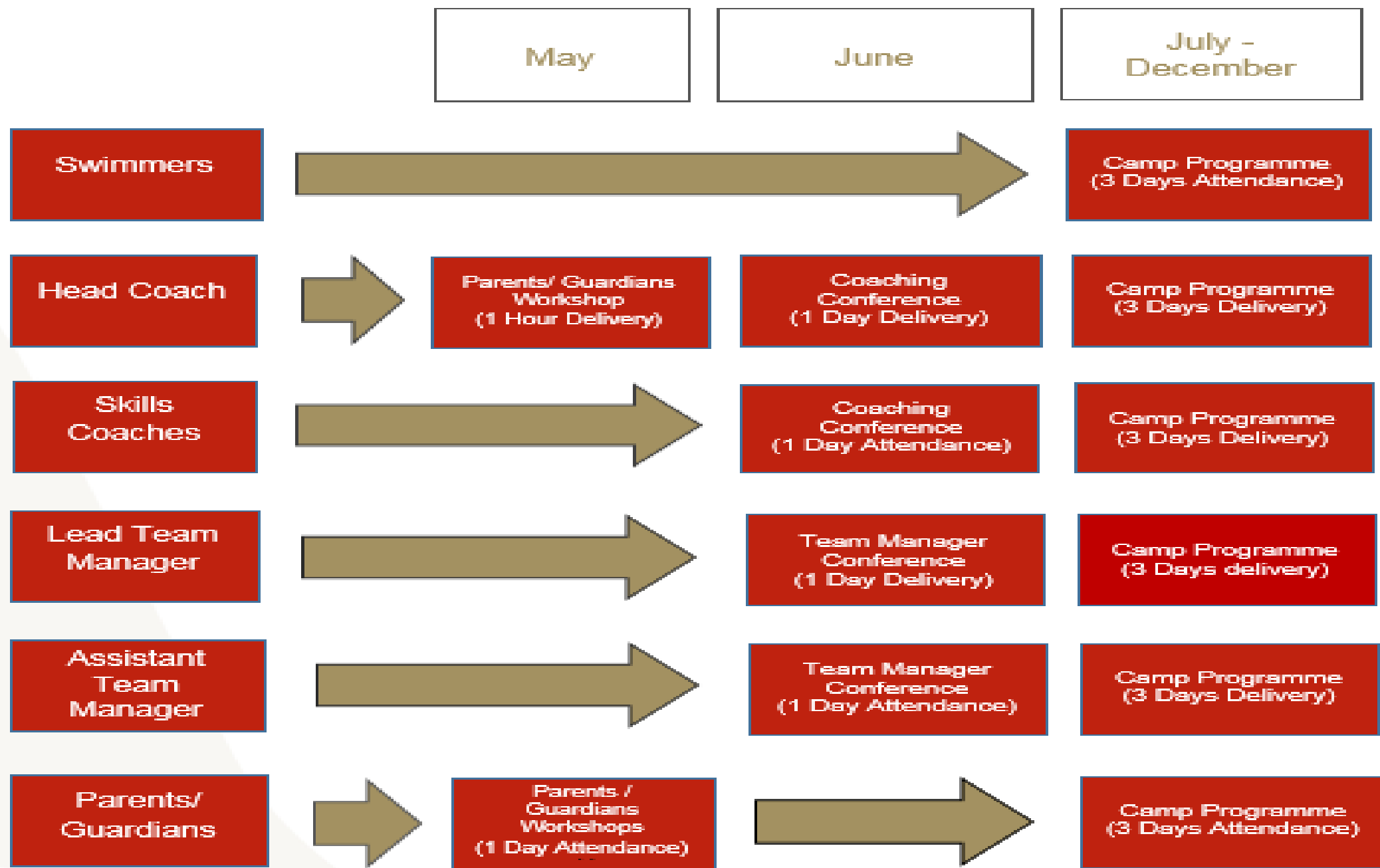
Jon Wills,
Head Coach, SW Region Development Programme

The Development Programme Pathway



The Regional Development Programme





Regional Development Programme

Swimmer Programme:

- 3 x 1 day camps (July, September/October, December)
- 36 swimmers (18 girls and 18 boys) aged 12 years in the year of competition
- Selected from rankings (selection policy available on the Regional website)



Selection Policy

- Minimum activity level: Attendance at three x one day events in July, September/ October, December (various dates/locations within the region).
- A total of 36 swimmers (18 Male/ 18 Females) will be selected as follows:
- The Swim England rankings data base will be used for selection purposes. Only long course times achieved between January 1st 2018 and the Monday following the final Regional 'Age Group' Championship weekend in 2018, will be considered.
- Swimmers must have competed in at least one event at the Regional Championships (extenuating circumstances such as illness/ injury should however be considered where possible).
- Swimmers are selected based upon their region of representation and not their club.
- The highest ranked 12 year old Male and Female (age as at 31st December in the year of competition), in each event (except Male 800 FS and female 1500m FS) competed at the Regional Championships will be initially selected.
- Further selections will be made from the 2nd, 3rd, 4th etc ranked swimmers.
- Where swimmers have an equal ranking, selections will be made prioritised according to the highest Fina Point Score in a single event.
- Swimmer selections must be completed within one week of the completion of the Regional Championships.
- Swimmers and Home Coaches must be informed within two weeks of the completion of the Regional Championships.
- Swimmers must reply to confirm whether they will be accepting or declining their place on the programme within three weeks of the completion of the Regional Championships.
- Swimmers should only be selected if they are indicating that they can commit to the full three day programme. If they subsequently are unavailable for all three days no refund should be given and no additional swimmers invited thus avoiding unnecessary disruption to the programme.
- Any reserve swimmers and their respective Home Coaches should then be informed within four weeks of the completion of the Regional Championships.
- All places on the programme must be filled and all paperwork returned by the end of June 2018, ready for the first camp of the programme which is scheduled to take place in July 2018.

Regional Development Programme

Swimmer Programme:

Pool Sessions

- short course
- starts and turns techniques

Dry Land Training

- pre and post pool activities
- fundamental movement patterns
- mobility and stability for starts and turns

Workshops

- principles of effective and efficient starts and turns techniques
- goal setting
- practical sports nutrition



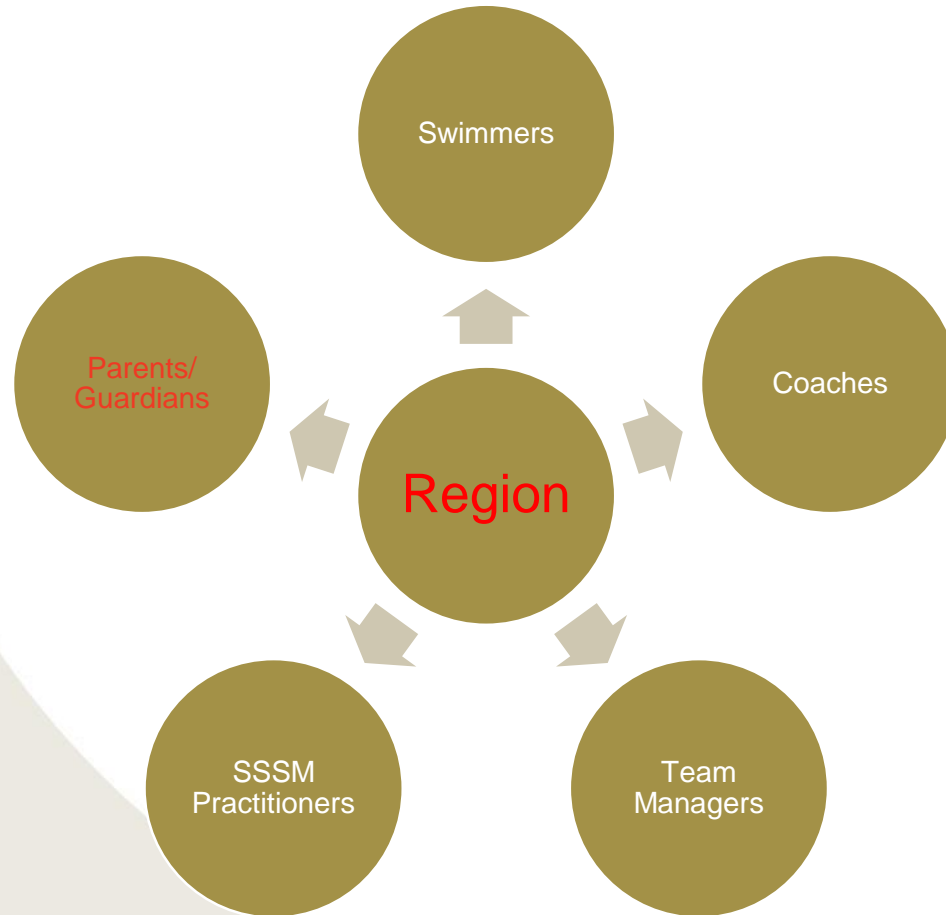
Regional Development Programme



Parent Programme:

- Regional parents workshop (today!)
- Attendance at the workshops on the 3 x 1 day Regional Camps (as outlined on the previous slide)

The Regional Development Programme



Any Questions?



