



Fina

WATER IS OUR WORLD

FINA Development Programme 2020

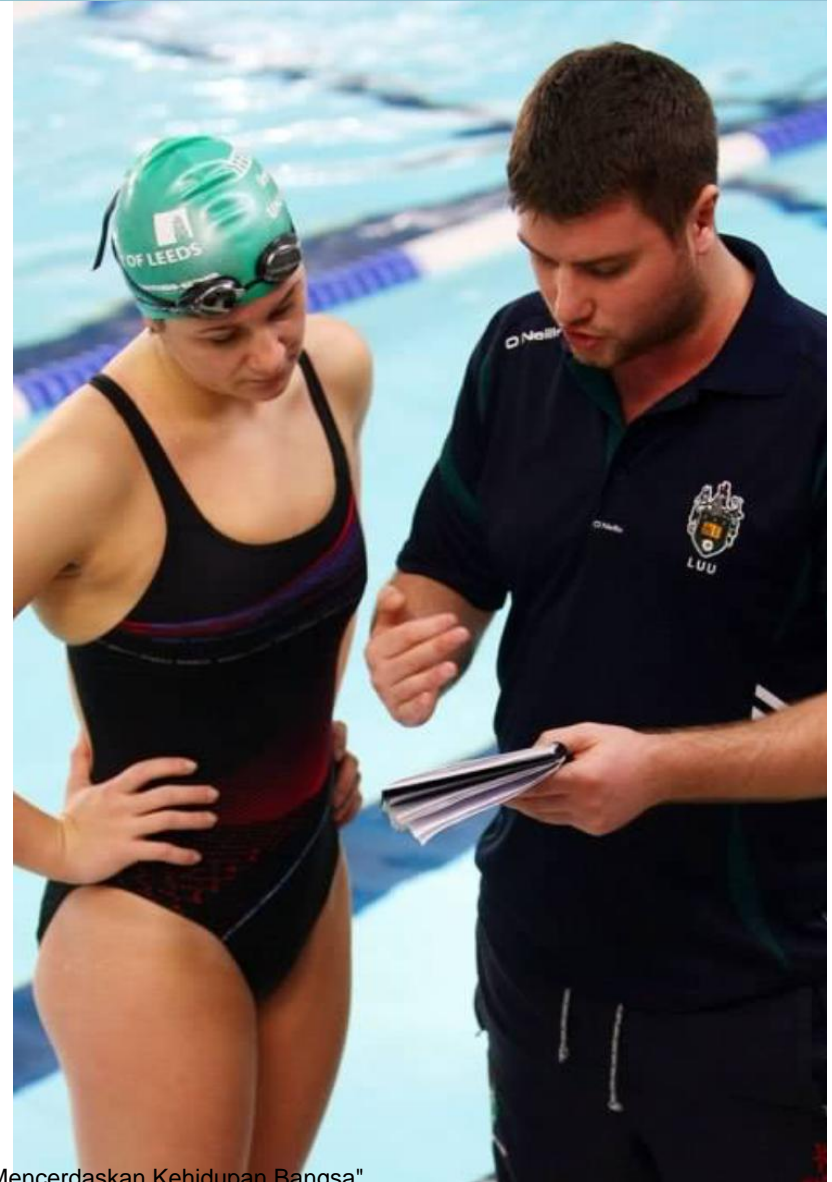
**FINA Online Coaches Clinic
Jakarta, Indonesia (Online)
7th – 10th September 2020**

James Richards

jmrichards@live.co.uk

City of Leeds Swimming Club

www.swimleeds.org.uk



4 day online clinic

7th – 10th September 2020

Advanced Level Clinic

Interactive Tasks

Group Presentations

Topics:

- Long Term Athlete Development
- Energy Systems & Training Zones
- Planning & Periodisation
- Performance Monitoring (Testing)
- Introduction to Land Training
- Coaching Considerations & Drill Progressions (4 Strokes & Turns)

Team·work *(noun)*
cooperative or combined
effort of a group of persons
working together as a
team for a common cause



Fina

WATER IS OUR WORLD

Long Term Athlete Development



Please share your current ideas about LTAD.

What do you already know about LTAD?

How do you apply LTAD in your clubs, programmes, schools in Indonesia?

What are the gaps? What's missing in Indonesia?

Long Term Athlete Development

Long Term Athlete Development (LTAD):

- allows coaches to balance athletes training, competition, recovery and lifestyle through developmental age (maturation) rather than chronological age;
- It is an **‘athlete-centred’** pathway;
- It is inclusive, meeting the needs of those with a disability;
- Underpins every level of teaching and coaching in swimming;



Long Term Athlete Development

Reasons for LTAD:

- Offers a clear development pathway leading to improved physical and psychological performances through optimum skill development;
- Highlights gaps in current athlete development pathway programmes;
- Includes specific measurements for optimum development of your athletes;
- An effective planning tool for supporting sport science and medicine staff alongside other support staff;

Ages

M: 18+

F: 16+

M: 15-18

F: 14-16

M: 12-15

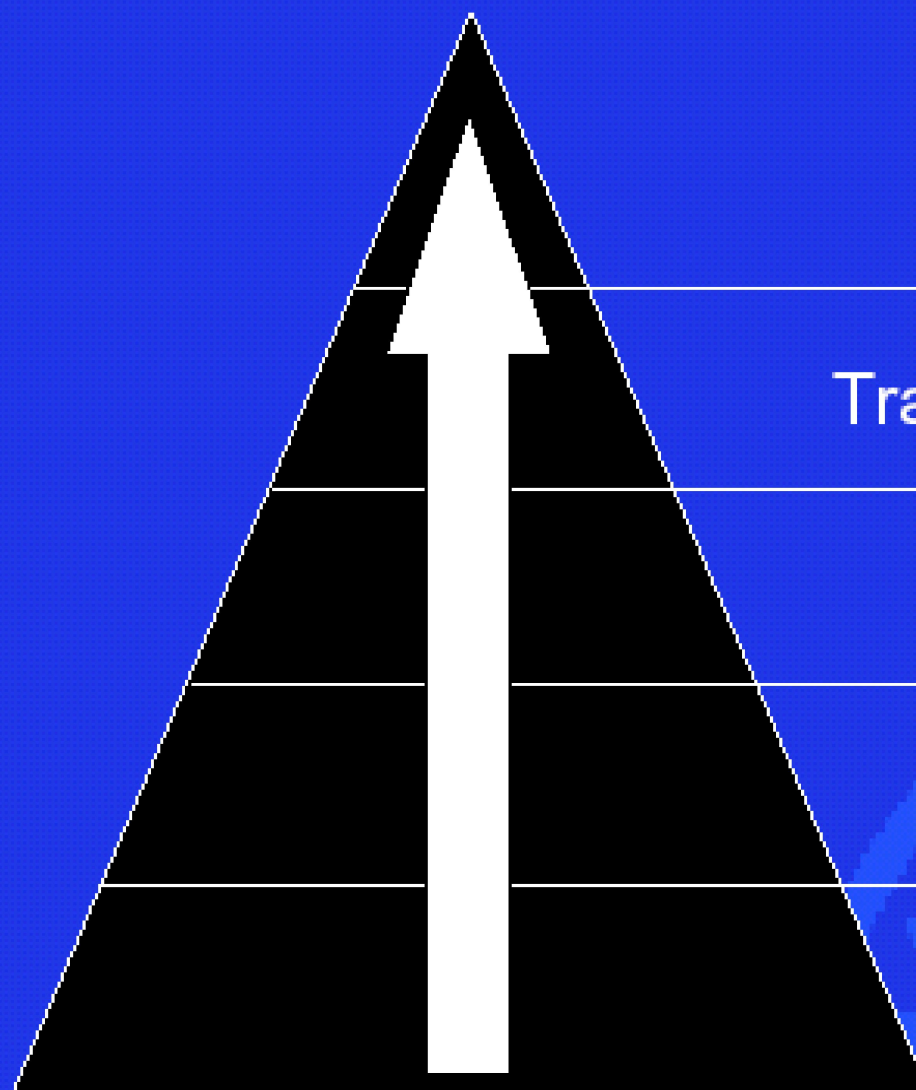
F: 11-14

M: 9-12

F: 8-11

M: 6-9

F: 5-8



Training to Win

Training to Compete

Training to Train

SwimSkills

FUNDamentals

The Swimmer



Long Term Athlete Development

Chronological Age:

the number of years a person has lived. Years, of course, being Earth revolutions around the sun. This is the one we're all very familiar with.

Biological Age:

a description of an individual's development based on biomarkers. A **biomarker** is a recordable molecular or cellular event. Here we're looking at the individuals as they are, not necessarily when they were born.

Psychological Age:

a subjective description of one's experience using non-physical features. Now we're trying to say how old a person is without markers. We used the Earth's revolutions and biomarkers before, now we have to rely on something that's a little more ephemeral: experience, logic, and emotions.

Functional Age:

a combination of chronological, biological, and psychological ages. What is happening is instead of focusing on one aspect at a time, we are summarizing them to create a more holistic picture of a person. Functional age would give you the clearest understanding of a person.

Long Term Athlete Development

Boys vs. Girls:



- In most cases, girls will develop at a much quicker rate than males.
- With this in mind, female athletes will generally progress through a club squad structure at an accelerated rate.
- The average age for females at the Olympic Games is 15-19yrs. Males are 20+yrs.
- There is no need to rush the males. We are looking for longevity in the sport!

Active Start

- Develops basic movement skills in a range of safe settings
- Children **need to be active** in some way every waking hour and daily physical activity must include free, unstructured game/fun play
- Includes parent-led and pre-school physical activities
- Allowed to discover their limits and to take small but fun risks in safe supervised settings
- Further development in the playground
- Promoting the effective teaching of swimming and rhythmic movements

FUNDamentals

- Structured play, still developing Fundamental Movement Skills (FMS);
- Introduction of some very basic, self-directed, sport specific skills;
- The ABC's of athleticism;
- Speed, Power, Endurance



Active Start / FUNdamentals



Active Start / FUNdamentals



Aquatic Breathing

Active Start / FUNdamentals





Learning to Train (Swim Skills)

- “Building Technique”
- F: 8-11 years / M: 9-12 years;
- Develop specific skills;
- Participation in other sports;
- Warming up / cooling down;
- Stretching;
- Hydration and Nutrition;
- Recovery.

Training to Train

- “Building the Engine”
- F: 11-14 yrs / M: 12-15 yrs.
- Aerobic conditioning.
- Individualisation of training.
- Training vs. Competition.
- Strength & Conditioning (body weight).
- Periodisation (single).



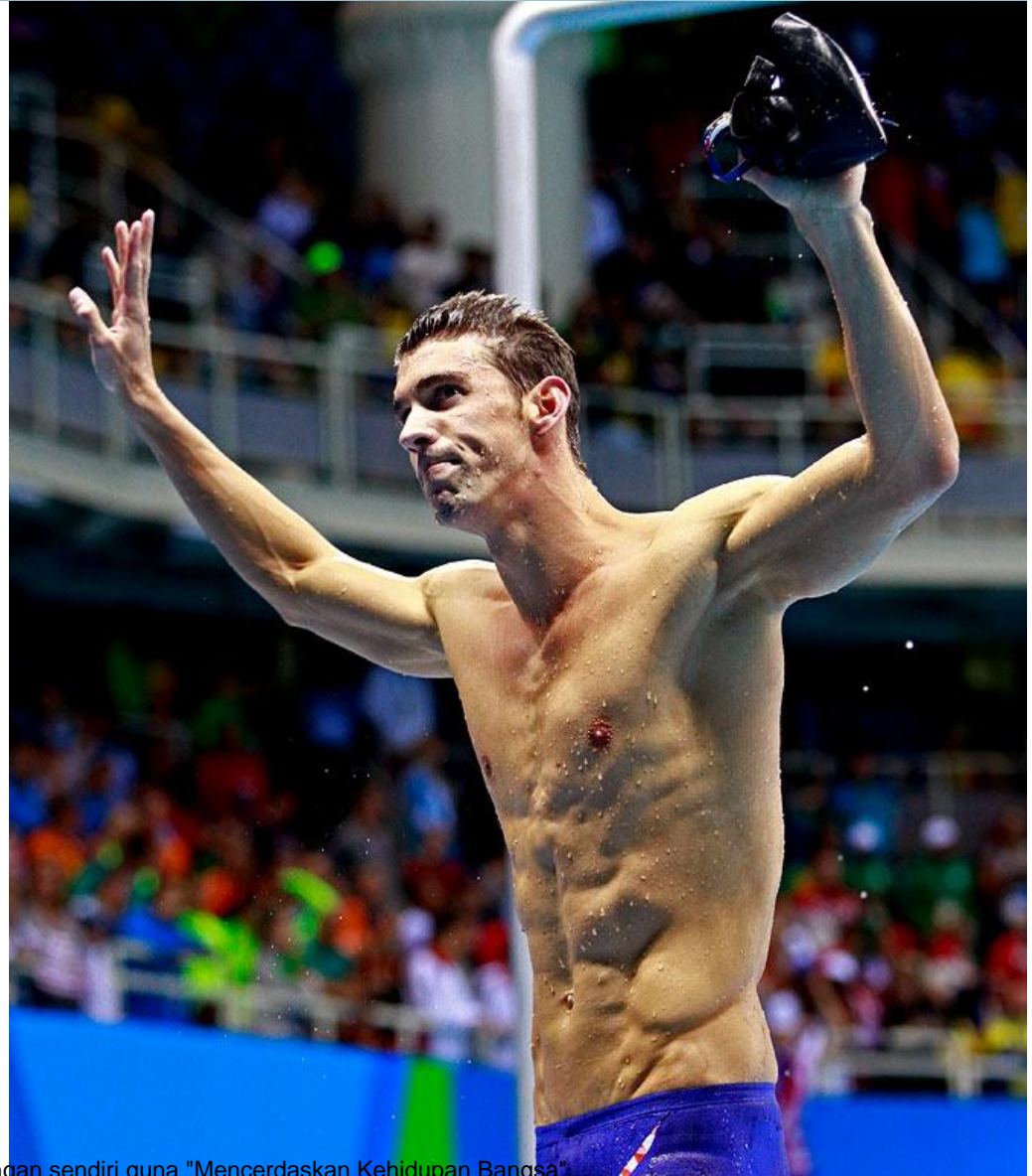


Training to Compete

- “Optimising the Engine”
- F: 14-16 yrs / M: 15-18 yrs.
- Continuing conditioning.
- Increased intensity (training zones).
- Strength & Conditioning (weights).
- Periodisation (double / triple).

Training to Win

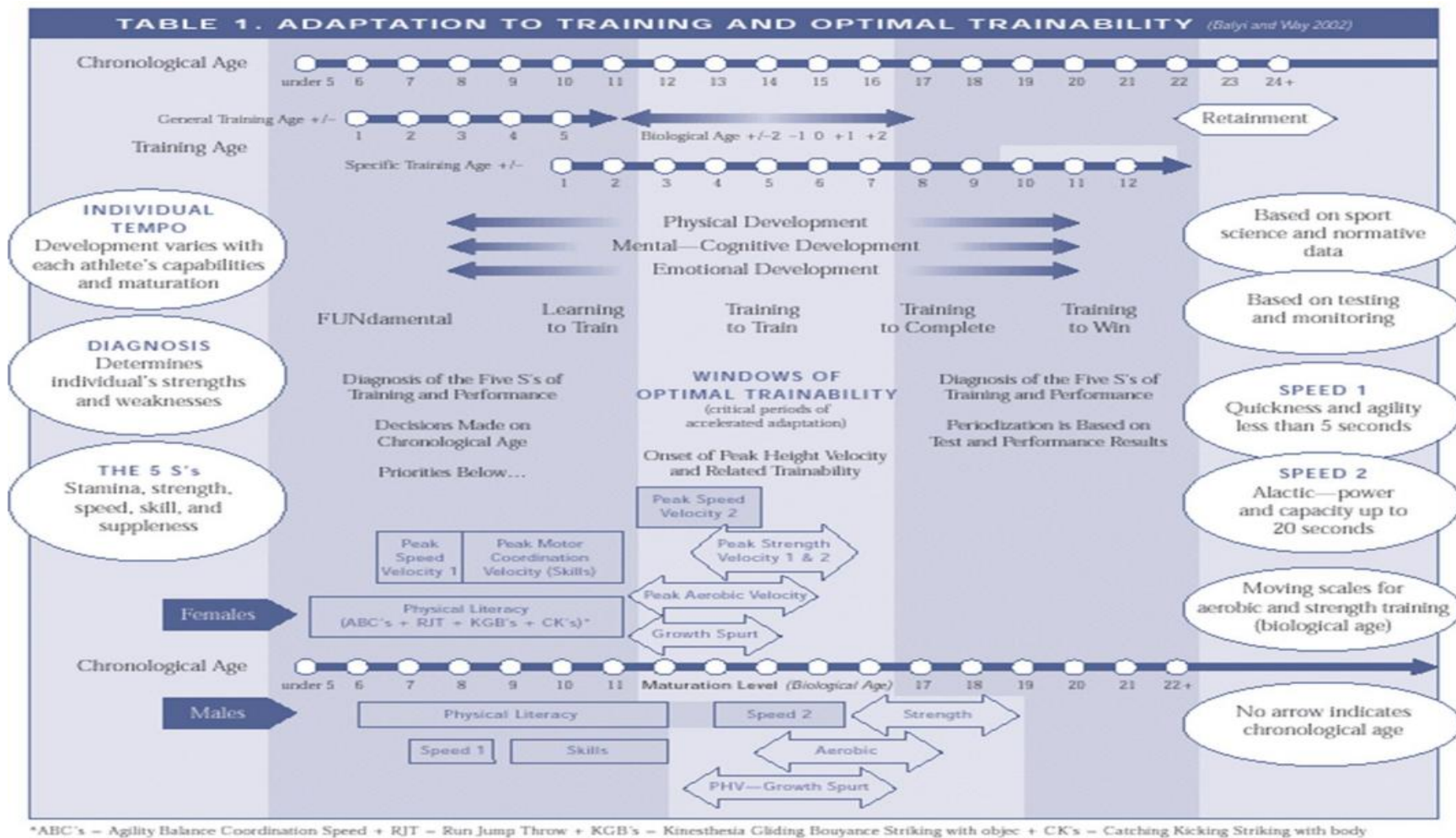
- “Maximising the Engine”
- F: 16+ yrs / M: 18+ yrs.
- Total specialisation.
- Psychological.
- Periodisation (double / triple).



Retirement/Retainment (Active for Life)

- Other Aquatic Sports
- Officiating
- Administration
- Events Management
- Teaching/Coaching
- Masters Swimming

Windows of Opportunity



Suggested Training Loads

LTAD Stage	Number & Duration of Sessions	Session & Weekly Volumes
Active Start	General Sport 5-6 times per week	N/A
FUNdamentals	1-2 sessions, 30 mins	N/A
Swim Skills	4-6 sessions, 60-90 mins	8,000-16,000m per week
Training to Train	6-12 sessions, 2hrs	24-32km
Training to Compete	8-12 sessions, 2hrs	44-52km
Training to Win	10-15 sessions, 2hrs	N/A

APPENDIX V - TABLE OF IDEAL TRAINING PROGRESSIONS

Female age (years)		Male age (years)		Session Numbers	Session Lengths (hours)	AM	PM	W/E	Total
Normal	Fast Track	Normal	Fast Track						
5/6	5/6	6/7	6/7	1	1 x 1 hr	0	1	0	1
5/6	5/6	6/7	6/7	2	2 x 1 hr	0	1	1	2
6/7	6/7	7/8	7/8	3	3 x 1 hr	0	2	1	3
7/8	7/8	8/9	8/9	3	2 x 1.5 hrs 1 x 1 hr	0	2	1	4
8/9	8/9	9/10	9/10	4	1 x 2 hrs 3 x 1.5 hrs	0 or 1	2 or 3	1	6.5
9/10	9/10	10/11	10/11	5	2 x 2 hrs 3 x 1.5 hrs	1	3	1	8.5
10/11	10/11	11/12	11/12	6	3 x 2 hrs 3 x 1.5 hrs	1 or 2	2 or 3	1 or 2	10.5
11/12	10/11	12/13	11/12	7	5 x 2 hrs 2 x 1.5 hrs	2	4	1	13
12/13	11/12	13/14	12/13	8	6 x 2 hrs 2 x 1.5 hrs	3	4	1	15
13/14	12/13	14/15	13/14	9	9 x 2 hrs	3 or 4	4 or 5	1 or 2	18
14+	13+	15+	14+	10	10 x 2 hrs	4 or 5	5	1 or 2	20

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".



In groups, discuss the differences between adult and children in sport. Consider growth and development. How might we need to coach these differently?

Prepare to share with your peers.

Adult vs. Child

Adulthood signifies:

- Energy system production - increases in muscle size and contraction
- Oxygen uptake improvements - lung function, increased blood volume and oxygen deliver
- Muscle glycogen levels start to produce more Lactic Acid
- Improved liver and kidney development and function
- Significant shift in hormone production as we mature

Adult vs. Child

- Improved food/fluid absorption rate e.g. glycogen storage and protein synthesis
- Better fluid regulation
- Better temperature regulation
- Human Growth Hormone secretion approaches maximum (post puberty)
- Bone density improves

Adult vs. Child

Heart size and function:

- A child's heart is smaller and does not achieve its natural full size until full height is reached
- Pre-puberty aerobic endurance is limited, just as increasing the size of the muscles through strength training is limited
- Level of growth hormones rises during puberty, increasing heart and physical function through physical training
- Young athletes who develop aerobic power through skill development show that they benefit from a rise in VO_{2max} levels at puberty by as much as 10 - 20%

Aerobic Training

20-30 minutes, 75% max HR exercise, 3-5 times / week* results in:

- Increase in stroke volume (the volume of blood pumped by the heart per beat)
- Increase in efficiency of muscle contraction



25% improvement in VO_{2max}



10% improvement in VO_{2max}





Break Out Task...

Discuss the information you have received.

How will this impact on your coaching? Will you make any changes?

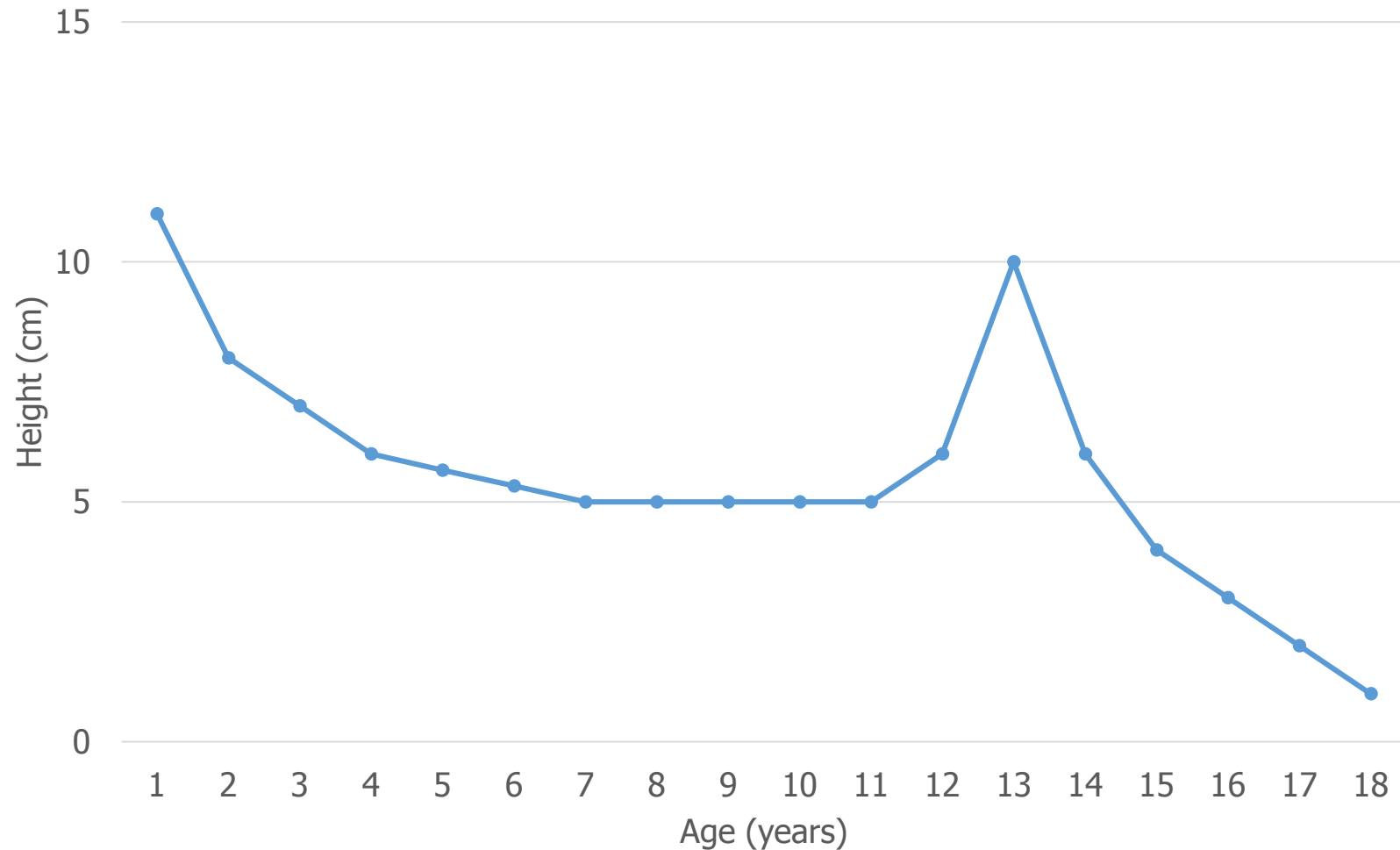
By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

Chronological & Biological Growth

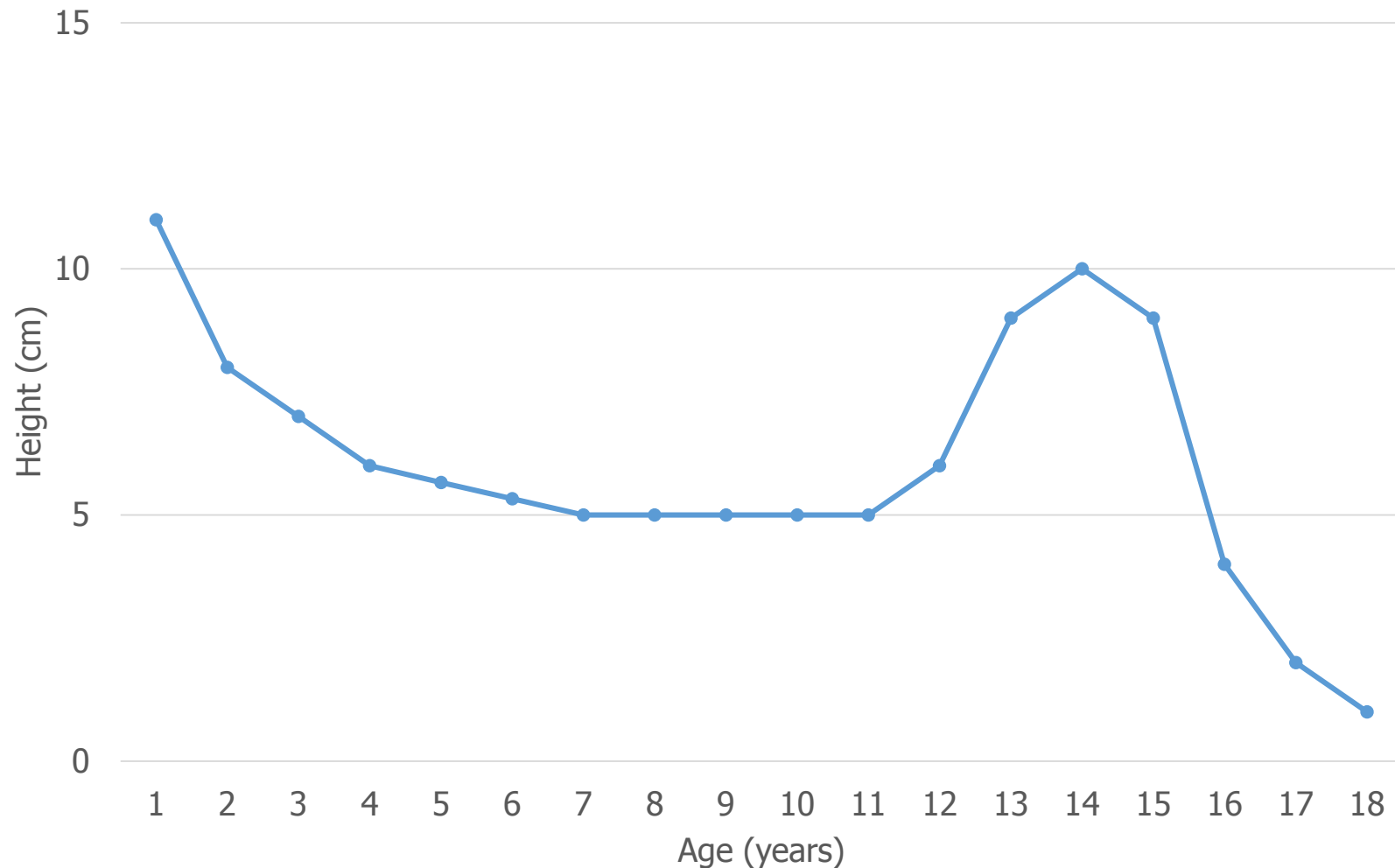
- Individuals follow a predictable pattern of physical growth but the rate of growth varies by individual
- Most children grow about 6.5cm and gain 2.3 Kg's each year, but athletes of the same chronological age can vary by as much as 5 biological years!

“The most intense period of growth for girls is between 11 – 14 years; whilst for boys it is between 13 – 16 years”.

Peak Height Velocity (Females)



Peak Height Velocity (Males)



Measuring and Monitoring Peak Height Velocity

- In the Training to Train phase it is vital to monitor each individual accurately to identify when PHV is taking place
- Then, and only then, can significant aerobic and anaerobic improvements take place
- The key is for the coach to implement this into their periodisation plans for each athlete

**However, technical development
should STILL be the primary focus!**



Working as a group on your table, discuss how you might monitor PHV with your groups of swimmers?

Discuss how you might analyse and use this data.



Fina

WATER IS OUR WORLD



Fina

WATER IS OUR WORLD

LTAD in a Club Programme City of Leeds Swimming Club

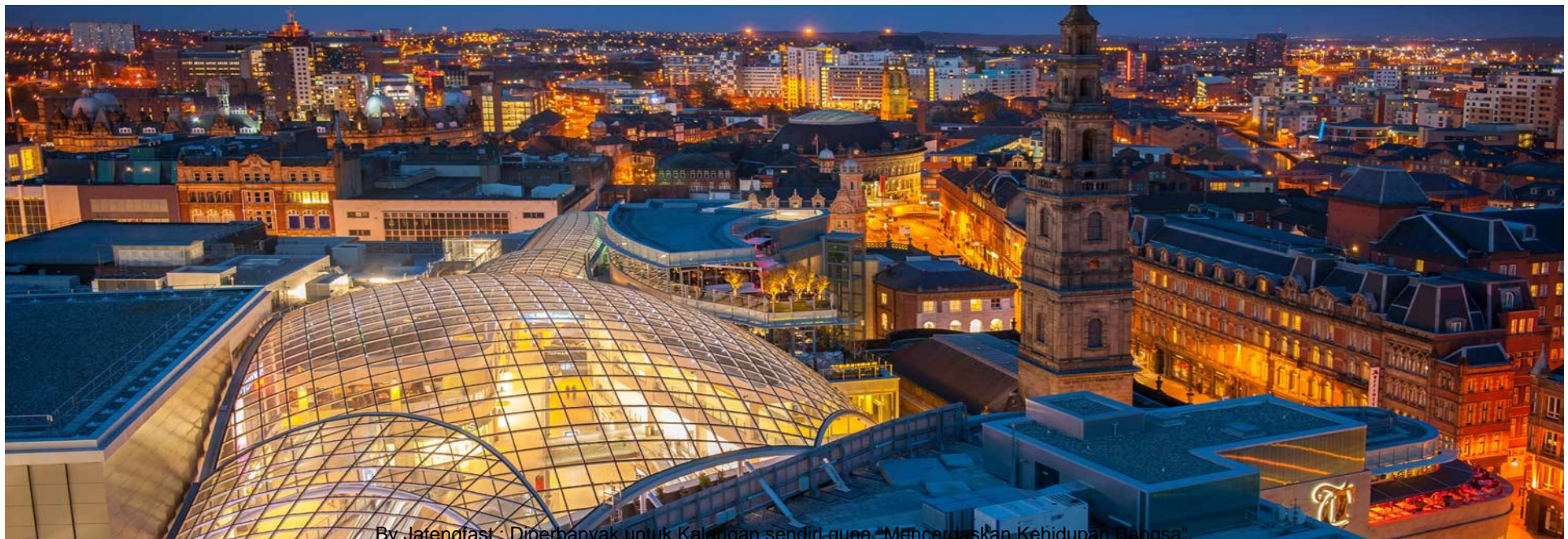
Population – Circa. 790,000

Area – 551km²

14 Local Authority Swimming Pools

Several Private Health Clubs

Several Schools with Pools







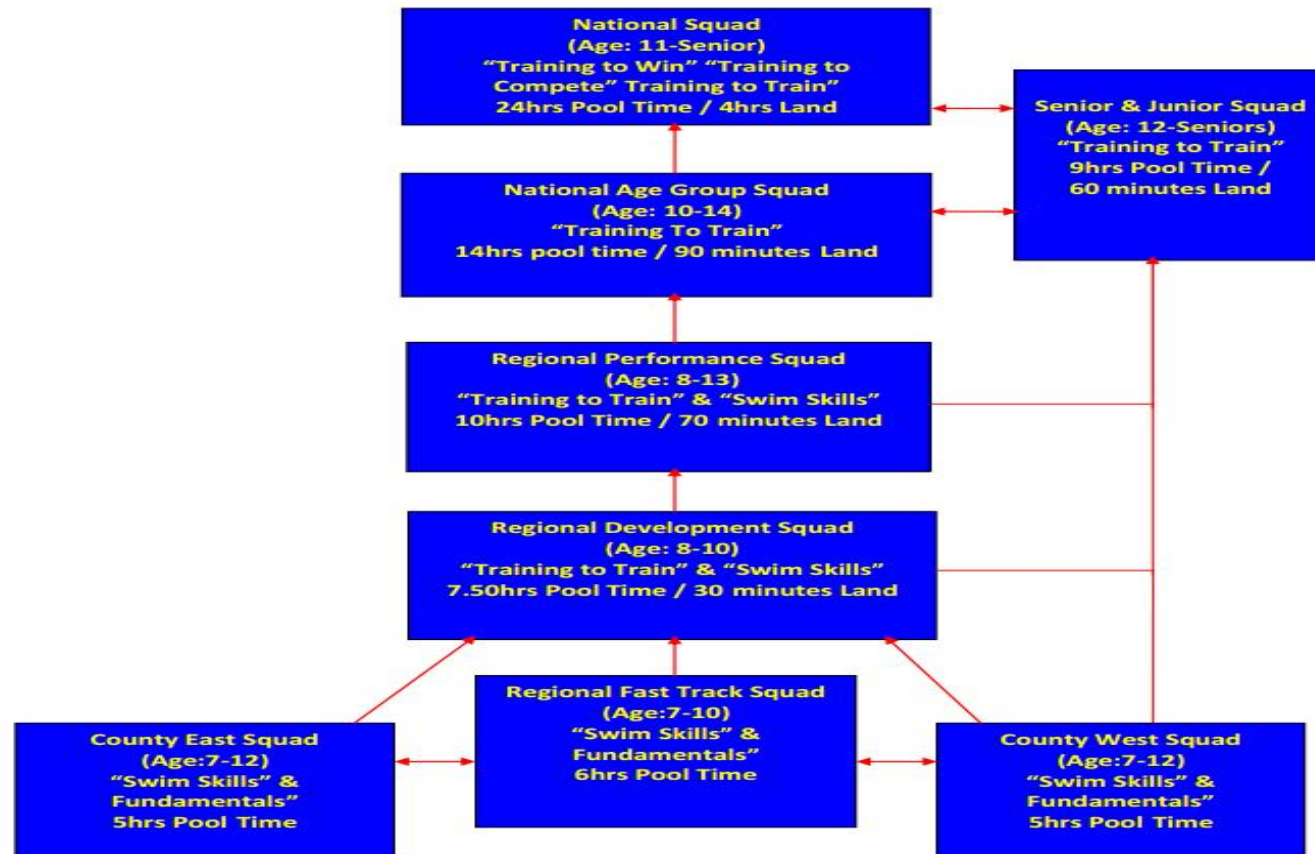


- Two parts to the programme...
- Great Training Facilities (including a 50m pool)
- Good access to facilities (pool and gym)
- Successful 'Learn to Swim' programme (10,000 children)
- Progressive Coaching Programme (circa. 500 members)
- Full Time Coaching Staff (37hrs per week)
- Professionally Managed
- Links with Higher Education
- Support Services & Education Programme
- Endorsed by National Governing Body

- Club is managed entirely by volunteers
- The only method our athletes can compete
- Highly experienced individuals (event management, team management, child welfare, governance)
- Financially Sound
- Clear Policies
- Supports Athletes & Coaches (no input into management of squad system)
- Incredible history (Olympic Gold - 1988 / Over 100 Representatives)



CITY OF LEEDS
SWIMMING CLUB



Learn to Swim Programme



Fina

WATER IS OUR WORLD

Coaching Freestyle

What do we already know?



Using the BLABT model, outline some key technical aspects for each area.

Body, **L**egs, **A**rms, **B**reathing, **T**iming

Share with your colleagues.

- Aquatic Alignment (Body Position)
- Head in line with Spine
- High Elbows or Straight Arms?
- Rotate to Enter → Early Catch
- High Elbow Underwater → Strong Levers
- “Eye of the Elbow”

- Knee Flexion – Relaxed Ankles
- Six Beat Kick – No Matter what Event (in-toeing)
- Bilateral or Unilateral?
- Watch the pulling arm on opposite side to breath
- Snorkels are really useful!



Coaching Freestyle

Video 1 – Streamlined Kicking



Coaching Freestyle

Video 2 – Rotating Kick



Coaching Freestyle

Video 3 – Extended Arm Kicking



Coaching Freestyle

Video 4 – 12 Kick Change



Coaching Freestyle

Video 5 – Underwater Pull



Coaching Freestyle

Video 6 – Half Recovery Hold



Coaching Freestyle

Video 7 – Half Recovery Hold → Extended



Coaching Freestyle

Video 8 – Half Recovery Hold → Swim



Fina

WATER IS OUR WORLD



Fina

WATER IS OUR WORLD

James Richards

City of Leeds Swimming Club

Twitter: jmrswim

E-Mail: jmrichards@live.co.uk



FINA Development Programme 2020

**FINA Online Coaches Clinic
Jakarta, Indoensia (Online)
7th – 10th September 2020**



Reflections – Day 1

Ages

M: 18+

F: 16+

M: 15-18

F: 14-16

M: 12-15

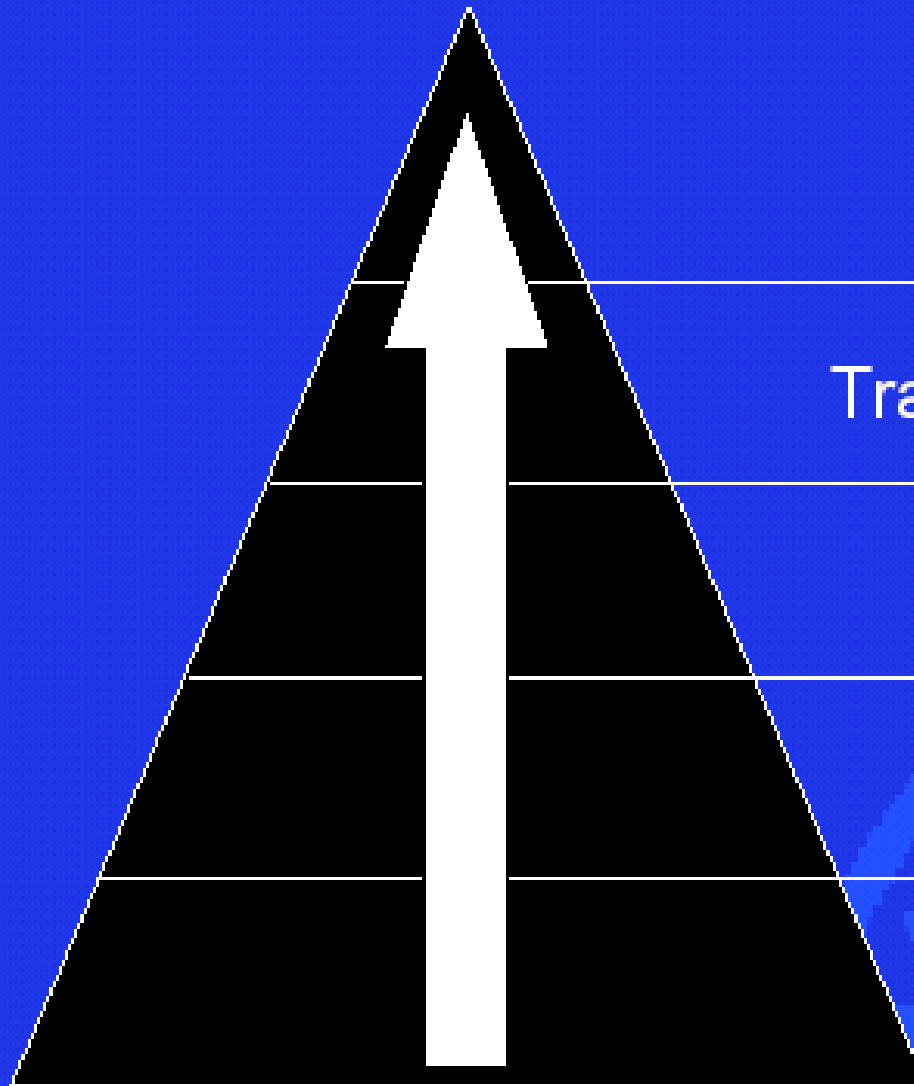
F: 11-14

M: 9-12

F: 8-11

M: 6-9

F: 5-8



Training to Win

Training to Compete

Training to Train

SwimSkills

FUNDamentals

The Swimmer

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

Long Term Athlete Development

Chronological Age:

the number of years a person has lived. Years, of course, being Earth revolutions around the sun. This is the one we're all very familiar with.

Biological Age:

a description of an individual's development based on biomarkers. A **biomarker** is a recordable molecular or cellular event. Here we're looking at the individuals as they are, not necessarily when they were born.

Psychological Age:

a subjective description of one's experience using non-physical features. Now we're trying to say how old a person is without markers. We used the Earth's revolutions and biomarkers before, now we have to rely on something that's a little more ephemeral: experience, logic, and emotions.

Functional Age:

a combination of chronological, biological, and psychological ages. What is happening is instead of focusing on one aspect at a time, we are summarizing them to create a more holistic picture of a person. Functional age would give you the clearest understanding of a person.

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

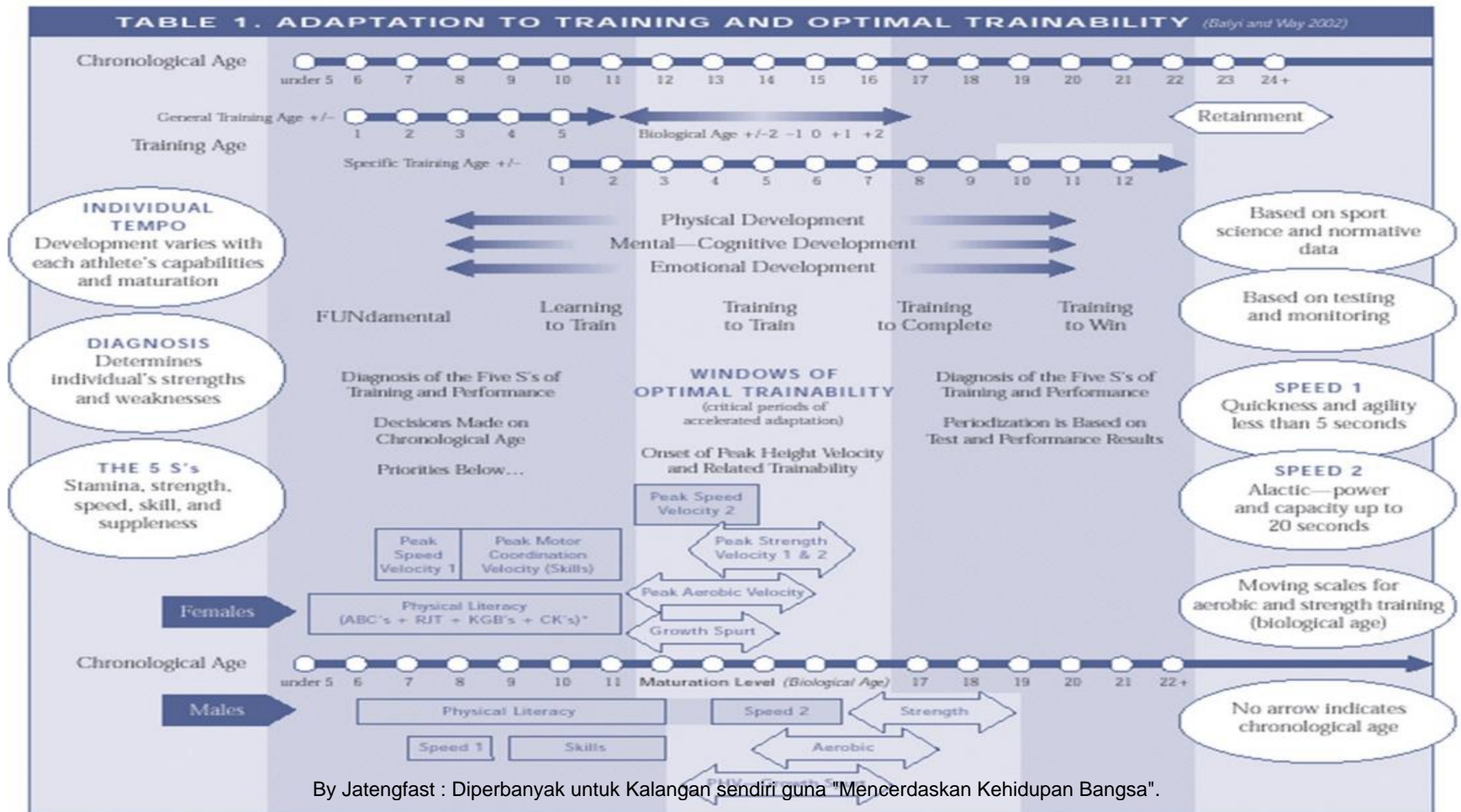
Long Term Athlete Development

Boys vs. Girls:

- In most cases, girls will develop at a much quicker rate than males.
- With this in mind, female athletes will generally progress through a club squad structure at an accelerated rate.
- The average age for females at the Olympic Games is 15-19yrs. Males are 20+yrs.
- There is no need to rush the males. We are looking for **longevity in the sport!**



Windows of Opportunity



By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

Suggested Training Loads

LTAD Stage	Number & Duration of Sessions	Session & Weekly Volumes
Active Start	General Sport 5-6 times per week	N/A
FUNdamentals	1-2 sessions, 30 mins	N/A
Swim Skills	4-6 sessions, 60-90 mins	8,000-16,000m per week
Training to Train	6-12 sessions, 2hrs	24-32km
Training to Compete	8-12 sessions, 2hrs	44-52km
Training to Win	10-15 sessions, 2hrs	N/A

Aerobic Training

20-30 minutes, 75% max HR exercise, 3-5 times / week* results in:

- Increase in stroke volume (the volume of blood pumped by the heart per beat)
- Increase in efficiency of muscle contraction



25% improvement in VO_{2max}



10% improvement in VO_{2max}



Chronological & Biological Growth

- Individuals follow a predictable pattern of physical growth but the rate of growth varies by individual
- Most children grow about 6.5cm and gain 2.3 Kg's each year, but athletes of the same chronological age can vary by as much as 5 biological years!

“The most intense period of growth for girls is between 11 – 14 years; whilst for boys it is between 13 – 16 years”.



Fina

WATER IS OUR WORLD



Energy Systems & Training Zones

- To create movement by muscle contraction, the body needs energy
- There are **3 main sources of energy production**
- All 3 energy systems work together at different rates
- The rate depends on how much energy the body needs and how quickly it needs it
- All systems can be trained

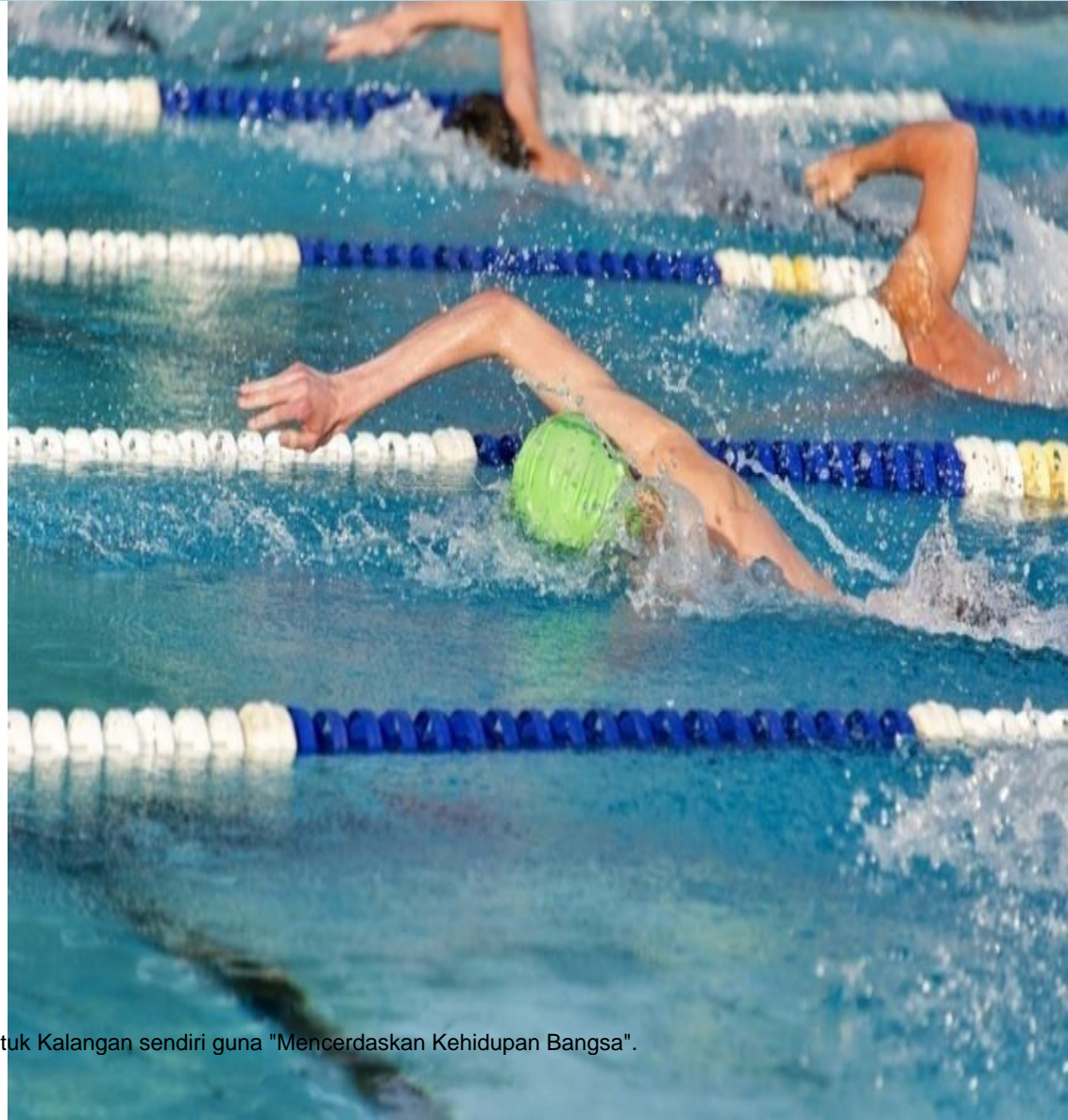
ATP-PC

- Anaerobic (without oxygen), high force/power production
- This system does not produce Lactic Acid (Alactic)
- Very fast energy production
- The main source of energy supply for the first 10-15 seconds of a race or short repeat maximal efforts



Anaerobic Glycolysis

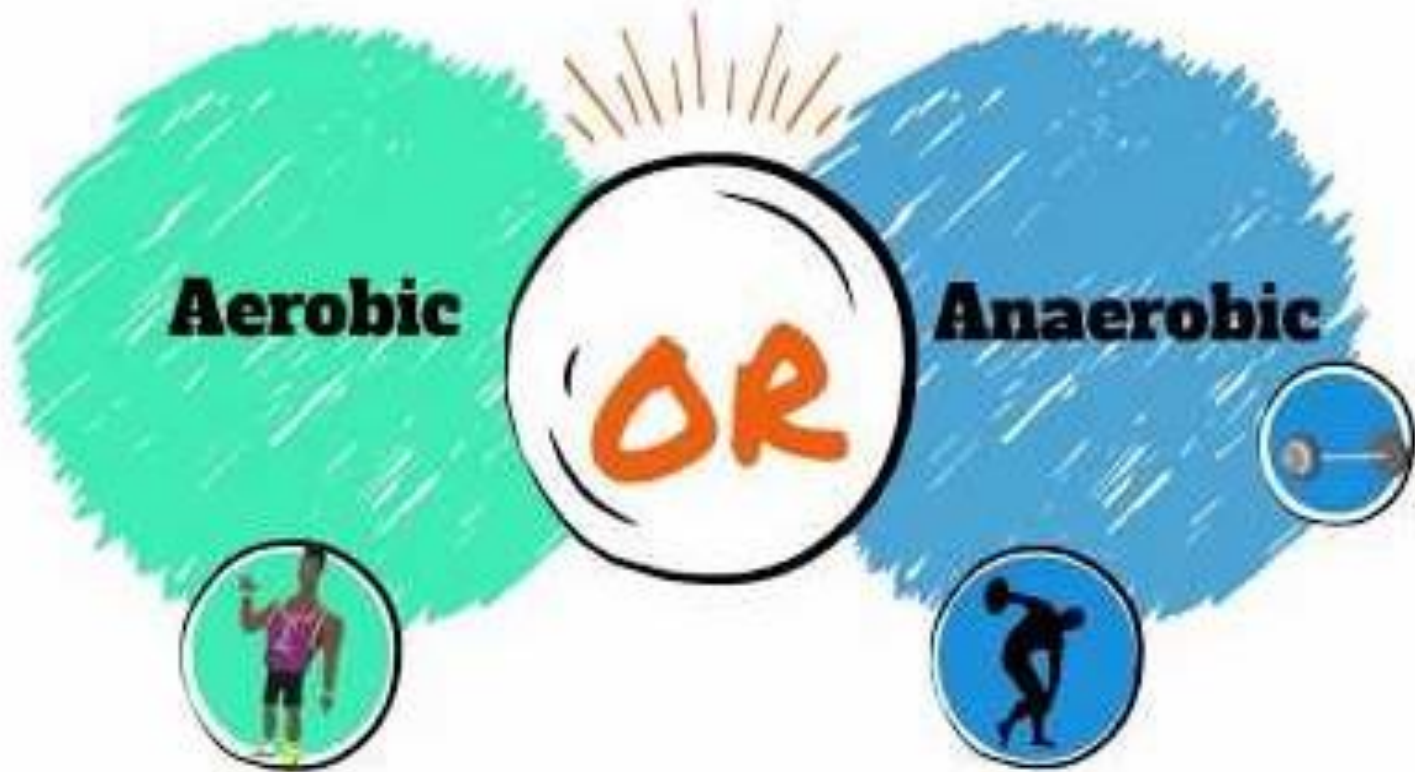
- Rapid breakdown of glycogen in the muscle
- Build up of lactic acid (the lactate system)
- High intensity repeats – system operates without oxygen
- Fast energy production – a major system for 1-2 min efforts



Aerobic

- Lower intensity endurance – using oxygen
- Slower energy production; supply can last for many hours
- Needs 1-2 min before becoming fully operational
- Can use carbohydrate (glycogen) or fat for fuel







Discuss the three energy systems we have just outlined. Can you think of activities we can do in the pool or on the land to develop these systems?

Perhaps have a look at some of your training programmes from last week? Does anybody wish to share a workout with us?

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mengerdaskan Kehidupan Bangsa".

Training Zones/Colours	Code	Name/Description	Main Energy System	HR (BBM)
Zone 1 Green	A1	Aerobic Low Intensity Base conditioning and technical training; warm-up and warm-down Predominantly Fat Metabolism; largely slow-twitch muscle fibre recruitment	Aerobic	>50
	A2	Aerobic Maintenance/ Development Base aerobic training Improves cardio-respiratory system Enhances Lactate Removal	Aerobic	40 – 50
Zone 2 Blue	AT	Anaerobic Threshold Maximal Lactate Steady State where Lactate production = Lactate removal Optimal intensity for the development of aerobic capacity	Aerobic	20 – 30
Zone 3 Red	VO₂	Aerobic Overload High intensity work at or close to maximal oxygen uptake (VO ₂ max) This type of training includes max Heart Rate sets; Improves VO ₂ max and aerobic power	Aerobic and Anaerobic	5 – 20
Zone 4 Bronze	LP	Lactate Production Training intensity results in the maximal speed of lactate production Includes Race Pace training – enhances rate of glycolytic energy production	Anaerobic	5- 15
Zone 4 Silver	LT	Lactate Tolerance High intensity work with medium rest to improve lactic acid buffering Developing the ability to tolerate lactate/ acidity in the muscle	Anaerobic	0 – 10
Zone 5 Gold	ATP	High intensity, short duration, long rest repeats designed to improve alactic energy production Enhances neuromuscular coordination and fast-twitch muscle fibre recruitment	ATP-PC	N/A

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

M. Peyrebune 2017

Regulating Training Zones

- How do we know which training zone our athletes are in, during training sessions?
- How do we regulate these?
- Do our athletes understand energy systems?

Code	Name/Description
A1	Aerobic Low Intensity Base conditioning and technical training; warm-up and warm-down Predominantly Fat Metabolism; largely slow-twitch muscle fibre recruitment
A2	Aerobic Maintenance/Development Base aerobic training Improves cardio-respiratory system Enhances Lactate Removal
AT	Anaerobic Threshold Maximal Lactate Steady State where Lactate production = Lactate removal Optimal intensity for the development of aerobic capacity
VO ₂	Aerobic Overload High intensity work at or close to maximal oxygen uptake (VO ₂ max) This type of training includes max Heart Rate sets; Improves VO ₂ max and aerobic power
LP	Lactate Production Training intensity results in the maximal speed of lactate production Includes Race Pace training – enhances rate of glycolytic energy production
LT	Lactate Tolerance High intensity work with medium rest to improve lactic acid buffering Developing the ability to tolerate lactate/ acidity in the muscle
	High Intensity Short Duration Long Rest Repeats High intensity, short duration, long rest repeats designed to improve alactic energy production Enhances neuromuscular coordination and fast-twitch muscle fibre recruitment

Regulating Training Intensity (Heart Rates)

- Measured in 'Beats Per Minute'
- Prescribed in relation to Maximum HR
- $220 - \text{Age} = \text{Maximum HR}$
- Maximum Heart Rate Test



Regulating Training Intensity (RPE)

- Rate of Perceived Exertion
- Measured Using Borg Scale
- Scale of 6 – 20
- Designed to align feeling and performance

6		I feel like I'm going to die if I don't stop soon.
5		I'm sweating like a pig. I couldn't talk even if I wanted to, but I can grunt!
4		This is hard, and I don't really want to talk, but I can still keep going
3		I'm a bit more puffed, but that won't stop me talking
2		I feel good, and I'm just a little bit puffed
1		I can run like this all day. In fact, I can walk faster than this!

Rating of Perceived Exertion

Borg RPE Scale

6	Very, very light	How you feel when lying in bed or sitting in a chair relaxed. Little or no effort.
7		
8		
9		
10		
11	Fairly light	
12	Somewhat hard	Target range: How you should feel with exercise or activity.
13		
14		
15		
16		
17	Very hard	How you felt with the hardest work you have ever done.
18		
19	Very, very hard	Don't work this hard!
20	Maximum exertion	

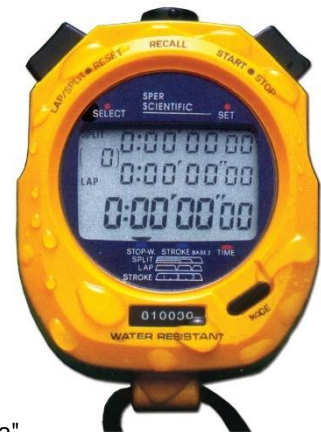
Lactate

- Measured using a special device (taking a sample of blood from the ear or finger).
- Measured in mm
- Useful when used in conjunction with 7x200m Step Test



Target Times

- Calculated on Life Time Best performances (or personal best times)
- Not the most accurate method of regulating training zones
- Can become the main focus for younger swimmers (outcome vs. process)





Target Times – Aerobic Zones

Training Zone	BBM	Target Time	Ideal Rep Length	Suggested Rest Times
A1	50+	Half 200m PB + 20	200m & Up	5-20 seconds
A2	40-50	Half 200m PB + 15-20	200m & Up	10-20 seconds
A3	30-40	Half 200m PB + 10-15	50-400m	10-20 seconds
AT	20-30	Half 200m PB + 7-10	50-400m	10-20 seconds



In pairs, create a training set for your chosen training zone. You'll need:

Target Times, HR and Rest Times/Intervals

Meet Jake...



D.O.B: 03/10/01

Club: Maldives Stingrays

Best Event: Freestyle

Personal Best Times:

<i>50m</i>	28.66
<i>100m</i>	1:02.88
<i>200m</i>	2:15.59
<i>400m</i>	4:51.08

Target Times – Vo2 Max / HR Set

- The highest intensity a swimmer can manage for the set duration
- Critical speed:

Heart rate 10 to 20 BBM (Beats Below Maximum)

Duration of set 30 mins swimming

24 x 100 free on 1:45 with swimmer holding 65 secs per repeat

7 x 200 step test can set critical speed or the following test:

$$CSS = (D2 - D1) \div (T2 - T1)$$

D1 = 50, D2 = 400, T1 = time for 50 metres in seconds and T2 = time

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".
for 400 metres in seconds

Target Times – Anaerobic & Race Pace

- Use Goal Paces from Race Model
- Target Times, Stroke Counts and Stroke Rates

		Time	Percent
50 m	0 - 50	00:25.27	22.4%
	50 - 100	00:28.79	25.5%
	100 - 150	00:29.70	26.3%
	150 - 200	00:29.20	25.8%
100 m	0 - 100	00:54.06	47.9%
	100 - 200	00:58.90	52.1%

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

Target Times – Speed (ATP-PC)

- Use Speed Charts

British Swimming 'SpeedChart'															BRITISH Swimming						
100 LCM Freestyle																					
Time	15m	20m	25m	30m	35m	40m	45m	50m (feet)	60m	65m	70m	75m	80m	85m	90m	95m	Turn (5m +10m)	1st 50m	2nd 50m	100m	
45.0	5.40	7.64	9.88	12.20	14.52	16.84	19.16	21.70	25.71	28.09	30.46	32.84	35.31	37.77	40.24	42.71	6.55	21.70	23.30	45.0	
45.5	5.47	7.74	10.00	12.34	14.69	17.03	19.37	21.95	26.00	28.40	30.80	33.21	35.71	38.20	40.69	43.19	6.63	21.95	23.55	45.5	
46.0	5.54	7.83	10.12	12.49	14.86	17.22	19.59	22.19	26.29	28.72	31.15	33.58	36.10	38.62	41.14	43.66	6.70	22.19	23.81	46.0	
46.5	5.61	7.93	10.24	12.63	15.02	17.41	19.80	22.43	26.58	29.04	31.49	33.95	36.50	39.04	41.59	44.14	6.78	22.43	24.07	46.5	
47.0	5.68	8.02	10.36	12.77	15.19	17.60	20.02	22.68	26.87	29.36	31.84	34.32	36.90	39.47	42.04	44.61	6.85	22.68	24.33	47.0	
47.5	5.76	8.12	10.48	12.91	15.36	17.79	20.24	22.92	27.17	29.68	32.18	34.69	37.29	39.89	42.49	45.09	6.93	22.92	24.58	47.5	
48.0	5.83	8.21	10.59	13.06	15.52	17.99	20.45	23.16	27.46	29.99	32.53	35.06	37.69	40.31	42.94	45.57	7.00	23.16	24.84	48.0	
48.5	5.90	8.31	10.71	13.20	15.69	18.18	20.67	23.40	27.75	30.31	32.87	35.43	38.09	40.73	43.39	46.04	7.08	23.40	25.10	48.5	
49.0	5.97	8.40	10.83	13.34	15.86	18.37	20.89	23.65	28.04	30.63	33.21	35.80	38.48	41.16	43.84	46.52	7.15	23.65	25.35	49.0	
49.5	6.04	8.49	10.95	13.48	16.03	18.56	21.10	23.89	28.33	30.95	33.56	36.17	38.88	41.58	44.29	46.99	7.23	23.89	25.61	49.5	
50.0	6.11	8.59	11.07	13.63	16.19	18.75	21.32	24.13	28.62	31.26	33.90	36.54	39.28	42.00	44.73	47.47	7.31	24.13	25.87	50.0	
50.5	6.18	8.68	11.19	13.77	16.36	18.94	21.53	24.38	28.91	31.58	34.25	36.91	39.67	42.42	45.18	47.94	7.38	24.38	26.12	50.5	
51.0	6.25	8.78	11.30	13.91	16.53	19.14	21.75	24.62	29.21	31.90	34.59	37.28	40.07	42.85	45.63	48.42	7.46	24.62	26.38	51.0	
51.5	6.33	8.87	11.42	14.06	16.69	19.33	21.97	24.86	29.50	32.22	34.93	37.65	40.46	43.27	46.08	48.89	7.53	24.86	26.64	51.5	
52.0	6.40	8.97	11.54	14.20	16.86	19.52	22.18	25.10	29.79	32.54	35.28	38.02	40.86	43.69	46.53	49.37	7.61	25.10	26.90	52.0	
52.5	6.47	9.06	11.66	14.34	17.03	19.71	22.40	25.35	30.08	32.85	35.62	38.39	41.26	44.12	46.98	49.84	7.68	25.35	27.15	52.5	
53.0	6.54	9.16	11.78	14.48	17.20	19.90	22.61	25.59	30.37	33.17	35.97	38.76	41.65	44.54	47.43	50.32	7.76	25.59	27.41	53.0	
53.5	6.61	9.25	11.90	14.63	17.36	20.09	22.83	25.83	30.66	33.49	36.31	39.14	42.05	44.96	47.88	50.79	7.83	25.83	27.67	53.5	
54.0	6.68	9.35	12.01	14.77	17.53	20.29	23.05	26.08	30.96	33.81	36.65	39.51	42.45	45.38	48.33	51.27	7.91	26.08	27.92	54.0	
54.5	6.75	9.44	12.13	14.91	17.70	20.48	23.26	26.32	31.25	34.13	37.00	39.88	42.84	45.81	48.78	51.74	7.98	26.32	28.18	54.5	
55.0	6.83	9.54	12.25	15.05	17.86	20.67	23.48	26.56	31.54	34.44	37.34	40.25	43.24	46.23	49.22	52.22	8.06	26.56	28.44	55.0	
55.5	6.90	9.63	12.37	15.20	18.03	20.86	23.70	26.81	31.83	34.76	37.69	40.62	43.64	46.65	49.67	52.69	8.14	26.81	28.69	55.5	
56.0	6.97	9.73	12.49	15.34	18.20	21.05	23.91	27.05	32.12	35.08	38.03	40.99	44.03	47.08	50.12	53.17	8.21	27.05	28.95	56.0	
56.5	7.04	9.82	12.60	15.48	18.37	21.24	24.13	27.29	32.41	35.40	38.37	41.36	44.43	47.50	50.57	53.64	8.29	27.29	29.21	56.5	
57.0	7.11	9.92	12.72	15.63	18.53	21.44	24.34	27.53	32.71	35.71	38.72	41.73	44.83	47.92	51.02	54.12	8.36	27.53	29.47	57.0	
57.5	7.18	10.01	12.84	15.77	18.70	21.63	24.56	27.78	33.00	36.03	39.06	42.10	45.22	48.34	51.47	54.60	8.44	27.78	29.72	57.5	
58.0	7.25	10.11	12.96	15.91	18.87	21.82	24.78	28.02	33.29	36.35	39.41	42.47	45.62	48.77	51.92	55.07	8.51	28.02	29.98	58.0	
58.5	7.32	10.20	13.08	16.05	19.04	22.01	24.99	28.26	33.58	36.67	39.75	42.84	46.02	49.19	52.37	55.55	8.59	28.26	30.24	58.5	
59.0	7.40	10.29	13.20	16.20	19.20	22.20	25.21	28.51	33.87	36.99	40.09	43.21	46.41	49.61	52.82	56.02	8.66	28.51	30.49	59.0	
59.5	7.47	10.39	13.31	16.34	19.37	22.39	25.42	28.75	34.16	37.30	40.44	43.58	46.81	50.03	53.27	56.50	8.74	28.75	30.75	59.5	
60.0	7.54	10.48	13.43	16.48	19.54	22.59	25.64	28.99	34.46	37.62	40.78	43.95	47.21	50.46	53.71	56.97	8.81	28.99	31.01	60.0	

How to use the British Swimming 'SpeedCharts'
 1) Use an athlete's target race time to set training times for short sprints – athletes should aim to achieve actual race speed in training for up to 60% of race distance***. Eg. An athlete aiming to swim 58.0 should be able to repeat 33.29 for 60m efforts.
 2) Determine projected 100m times, based on training times over shorter distances. Use the charts in this way to ensure that your training is speed specific. This is not a tool to predict race times, but merely a means of ensuring that sufficient speed is achieved in training.

Always use the 'SpeedCharts' in conjunction with other race analysis information – eg Stroke Rates, Stroke Counts, Underwater Parameters (distance, no. of kicks) and Breathing Patterns – to further improve the specificity of training, and always ensure that speed is achieved through technically excellent swimming!

All Times are based on the time from GUN to HEAD.
 If any other timing method is used then the appropriate adjustment must be made!

Timing Method Adjustments:	
Feet Off Blocks	-0.75
Time to Hand	-0.25
Feet Off Wall	-0.20

1) If calculating training times for short intervals – look up chart for time, then subtract the adjustment
 2) If determining projected 100m time – add adjustment then look up chart with adjusted time
 * Adjustments are approximate



In pairs, create a training set for your chosen training zone. You'll need:

Target Times, HR and Rest Times/Intervals

Meet Rebecca...



D.O.B: 01/02/01

Club: Palm Bay Swim Team

Best Event: Butterfly

Personal Best Times:

<i>50m</i>	30.51
<i>100m</i>	1:03.56
<i>200m</i>	2:18.62



Share a set that you did last week. Try to analyse the training intensities and see where you think it fits?

Then, look to refine it. Ensure it is the correct intensity and set specific goals for your athletes. Prepare the share with the wider group for discussion.

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".



Fina

WATER IS OUR WORLD

- Distance of Repeats
- Intensity (of effort)
- Number of Repeats
- Time for Rest

Always have specific targets to keep you on track!

A2 Aerobic Maintenance

- | | | |
|---|---|----------------|
| 1 | 4 x 800 F/C or Choice + 30 Rest | HR = 50 BBM |
| 2 | 8 x 400 IM Drill to Swim + 30 Rest | HR = 50 BBM |
| 3 | 1500/ 800/ 400/ 200/ 100 + 30 Rest
* Effort remains constant, speed increases slightly | HR = 50/40 BBM |
| 4 | 2500m Swim or 20/ 30 minutes swim | HR = 50/40 BBM |
| 5 | 10 x 300 as 1 Swim/ 1 Kick/ 1 Pull | HR = 50 BBM |
| 6 | 3 x [400/ 300/ 200/ 100] F/C or IM | HR = 50 BBM |

[T] Threshold

- | | | |
|---|---|----------------|
| 1 | 24 x 100 F/C + 20/30 Rest | HR = 30 BBM |
| 2 | 6 x 400 + 30 Rest | HR = 30 BBM |
| 3 | 12 x 200 + 30 Rest | HR = 30 BBM |
| 4 | 2000m Maximum, even pace | HR = 30/25 BBM |
| 5 | 3 x [2 x 100 on 1:30
2 x 200 on 2:45
2 x 100 on 1:20] | HR = 30 BBM |

VO₂ Maximal Aerobic

- | | | |
|---|--|---|
| 1 | 20 x 100 No. 1 stroke on 2 min | HR = 5 to 15 BBM |
| 2 | 8 x 200 + 60 Rest | HR = 5 to 15 BBM |
| 3 | 24 x 75 as 5 Max, 1 Steady | HR = 5 to 15 BBM |
| 4 | 3 x [3 x 100
2 x 75 (+ 25 Steady)
4 x 50] | HR = 5 to 15 BBM |
| 5 | 12 x 150 No 1/ F/C / No 1 | HR = 5 to 15 BBM |
| 6 | 4 x [200 on 3:30
2 x 100 on 2:00
4 x 50 on 70] | HR = 10 to 20 BBM
HR = 10 to 20 BBM
Alt 400/ 200 Pace |

La Prod Lactate Production

- | | | |
|---|---|----------------------|
| 1 | 8 x 50 #1 stroke on 4:00
Easy Swim between Reps | Max Effort & Speed |
| 2 | 12 x 75 on 4:00 - 1 Max, 1 Easy | Max Speed for 75 |
| 3 | 25/ 50/ 75/ 100/ 75/ 50/ 25
On 1 min/ 2min/ 3 min/ 4 min | Max Effort & Speed |
| 4 | 5 x [2 x 50 Max + 100 easy] | Use Speed Charts |
| 5 | 3 x [75/ 25 (100 Easy)
50/ 50 (200 Easy)] | Target 100 or Faster |

La Tol Lactate Tolerance

- | | | |
|---|---|--------------------|
| 1 | 5 x 100 #1 stroke on 4:00 | Max Effort |
| 2 | 4 x 150 on 5:00 | Max Effort |
| 3 | 8 x 75 on 3:00 | Aim for > 100 Pace |
| 4 | 3 x [25/ 50/ 75/ 100] | Max Effort |
| 5 | 4 x [4 x 50
100 Easy
2 x 100 @ 50 BBM] | Max Effort |

B Sp Basic Speed

- | | | |
|---|--|--|
| 1 | 10 x 25 Max (+ 25 easy) on 2:00 | Max Speed |
| 2 | 3 x [4 x 25 as 12½ Max 12½ easy] | Max Speed |
| 3 | 4 x [15/20/25/30 Sprints] | Use Speed Charts |
| 4 | Dive starts to 15/ 20/ 25/ 30m
Turns from 10m In to 10m Out | Race Speed + Faster |
| 5 | 3 x [Broken 100]:
30/40/30
20/30/30/20
40/30/20/10 | Faster than Race 100
Use Speed Charts
Longer Rest than La Prod |



Fina

WATER IS OUR WORLD



Fina

WATER IS OUR WORLD

Coaching Backstroke



Using the BLABT model, outline some key technical aspects for each area.

Body, **L**egs, **A**rms, **B**reathing, **T**iming

Share with your colleagues.

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

- Steady head
- To rotate or not to rotate? Bent Arm or Straight Arm Pull?
- Balance, rhythm, relaxation and controlled rotation are key to good technique.
- Timing of rotation is important to keep the stroke flowing and maintain balance
- Build a strong core strength programme to maximise underwater skill off the wall

- Important to hold SR throughout the race, this is a common fault particularly when swimming 200 BK
- Have the ability to maximise underwater transition from the start and turns, accelerate into first stroke at the surface.
- Rate of underwater kick is crucial to maintain momentum and speed off the wall
- Both BK and Fly kick sets are vital part of training for this stroke.



Share your thoughts on some of the information received. Make any changes to your own technical model.

Coaching Backstroke



By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

Video 1 – Rotating Kick

Video 2 – Extended Arm Kicking

Video 3 – 12 Kick Change

Video 4 – Half Recovery Hold

Video 5 – Half Recovery Hold → Swim



Fina

WATER IS OUR WORLD



James Richards

City of Leeds Swimming Club

Twitter: jmrswim

E-Mail: jmrichards@live.co.uk



FINA Development Programme 2020

**FINA Online Coaches Clinic
Jakarta, Indoensia (Online)
7th – 10th September 2020**

- ATP-PC
- Anaerobic Glycolysis
- Aerobic
- Training Zones

Training Zones/Colours	Code	Name/Description	Main Energy System	HR (BBM)
Zone 1 Green	A1	Aerobic Low Intensity Base conditioning and technical training; warm-up and warm-down Predominantly Fat Metabolism; largely slow-twitch muscle fibre recruitment	Aerobic	>50
	A2	Aerobic Maintenance/ Development Base aerobic training Improves cardio-respiratory system Enhances Lactate Removal	Aerobic	40 – 50
Zone 2 Blue	AT	Anaerobic Threshold Maximal Lactate Steady State where Lactate production = Lactate removal Optimal intensity for the development of aerobic capacity	Aerobic	20 – 30
Zone 3 Red	VO₂	Aerobic Overload High intensity work at or close to maximal oxygen uptake (VO ₂ max) This type of training includes max Heart Rate sets; Improves VO ₂ max and aerobic power	Aerobic and Anaerobic	5 – 20
Zone 4 Bronze	LP	Lactate Production Training intensity results in the maximal speed of lactate production Includes Race Pace training – enhances rate of glycolytic energy production	Anaerobic	5- 15
Zone 4 Silver	LT	Lactate Tolerance High intensity work with medium rest to improve lactic acid buffering Developing the ability to tolerate lactate/ acidity in the muscle	Anaerobic	0 – 10
Zone 5 Gold	ATP	High intensity, short duration, long rest repeats designed to improve alactic energy production Enhances neuromuscular coordination and fast-twitch muscle fibre recruitment	ATP-PC	N/A

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

M. Peyrebune 2017

Regulating Training Zones

- Heart Rate – Beats Below Maximum (HR)
- Rate of Perceived Exertion (RPE)
- Lactate
- Target Times

- Distance of Repeats
- Intensity (of effort)
- Number of Repeats
- Time for Rest

Always have specific targets to keep you on track!



Fina

WATER IS OUR WORLD



Fina

WATER IS OUR WORLD

Planning & Periodisation



Let's discuss the importance of planning. Why do you think it is important to plan? What are the benefits?

Prepare to share your ideas with the other groups.

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

Why Plan?

- Improves coach organisation
- Helps to ensure that all aspects of training and performance are considered
- Planning allows Coach to set direction for the swimmer and programme
- Allows athletes to be part of, and offer input into the planning process and the opportunity to achieve their goals and potential
- Allows Coaches (and athletes) to measure their effectiveness, as well as the effectiveness of their programme
- Motivates Coaches and athletes alike

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".



What factors do you need to consider, when putting together your plans?

Prepare to share your ideas with the other groups.

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

Factors to Consider

- Lifestyle e.g. school, exams, holidays, family and other commitments
- Stage of Long-Term Athlete Development (skill learning)
- What is the session/ week/ month trying to achieve?
- Can you vary them – they should not all look the same!
- Time of the season
- Types of competition
- What resources are available (i.e. training location/ equipment)
- Environmental factors

Long Term Athlete Development (LTAD):

- allows coaches to balance athletes training, competition, recovery and lifestyle through developmental age (maturation) rather than chronological age;
- It is an ‘athlete-centred’ pathway;
- It is inclusive, meeting the needs of those with a disability;
- Underpins every level of teaching and coaching in swimming;



Planning & Periodisation

Training to Win

High performance through training and competition

high performance

multiple periodisation

1 to 3+ competitive peaks
(depending on event)

40:60

Training to Compete

Preparation for high performance programmes

perfection

double periodisation

two competitive peaks

55:45

Training to Train

Skill/technique and fitness development

sport-specialised

75:25

Learning to Train (SwimSkills)

Development and skill/technique practice

initial

single periodisation

one competitive peak

75:25

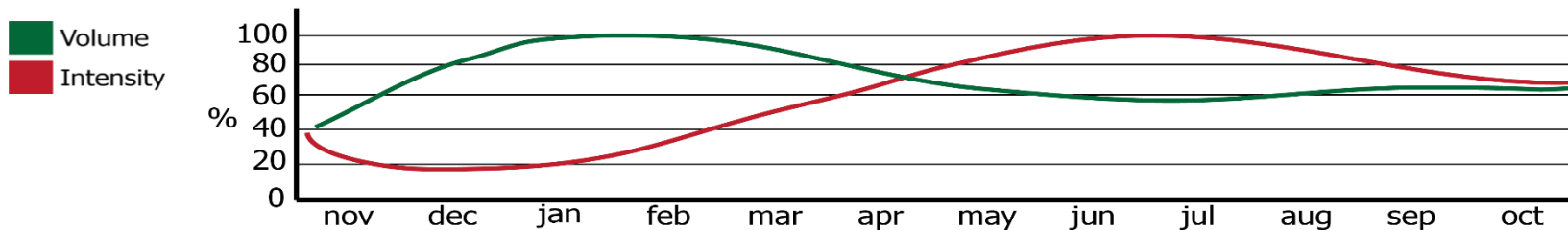
Periodisation

Organising types of training with specific objectives into blocks (or periods) in order to maximise physiological, technical or psychological benefits in order to improve performance

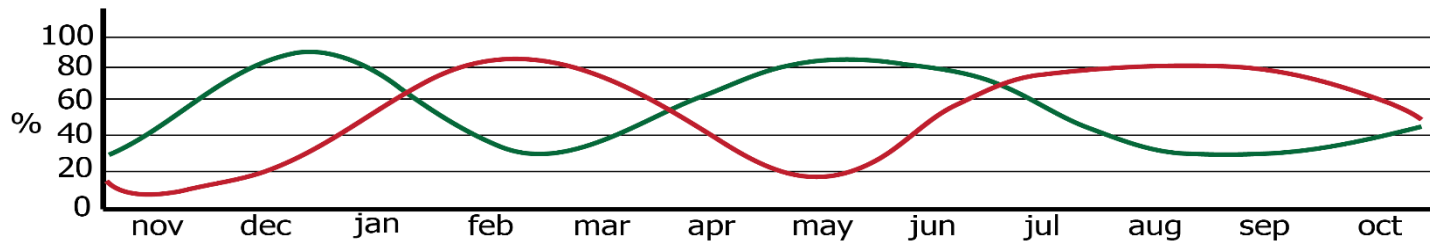
- Single
- Double
- Multiple

Examples of Periodisation

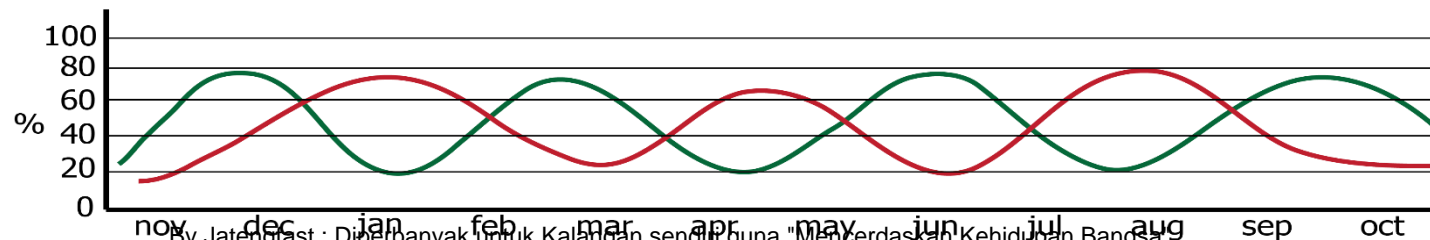
Single Periodisation



Double Periodisation



Multiple Periodisation



Periodisation

There are many types of plans, ranging from one activity within a session, through to 4-year Olympic cycles. The common categories of coaching plans are:

- Long Term Plans (yearly/ annual and up to 4 years)
- A larger block of work typically 12-18 weeks (Macrocycles)
- Monthly (4-6 weeks) Plans (Mesocycles)
- Weekly Plans (Microcycles)
- Session Plans (the training unit)

Planning Process

When putting your season plan together, you should follow the steps below:

- Identify the most important competition and work backwards to the start of your season;
- Determine each larger training phase (macro cycle) and set objectives for each;
- Construct smaller blocks of training that target physiological development (meso cycles) and set objectives;
- Plan how you will monitor and evaluate the effectiveness of the plan;
- Establish a standard weekly plan for each phase;

Macro Cycles

- Consider LTAD recommendations for number of 'peaks' within the season;
- Generally, a season plan for Age Groupers would consist of 2 x 24 week macro cycles;
- Youth and Seniors would normally have 3 x 12-16 week macro cycles

There are many different ways to construct your season plan. A limiting factor however might be your competition structure.



In groups, discuss your current approach to the season. What opportunities are there to adopt a different model? What competitions are your focus here in Indonesia?

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

Meso Cycles

preparation

Aerobic improvement,
technique development and
assessment

main set training

Increasing intensity, anaerobic
threshold, VO_2 max, continue
assessing progress, technique
focus

competitive

Race pace training, lactate
production, lactate tolerance,
lactate removal, technique
focus

recovery

Low intensity (A1/A2),
technique focus

tapering

ATP-PC, tactical, technique
focus

Micro Cycles

It is important to remember that a number of aspects can fatigue (and reduce performance of) a swimmer.

These include:

- The muscle being more acidic (linked to Lactic acid build up)
- Decrease in muscle and liver glycogen – needed for higher intensity repeats
- Fatigue of the central nervous system (muscle control)

Training Week Considerations

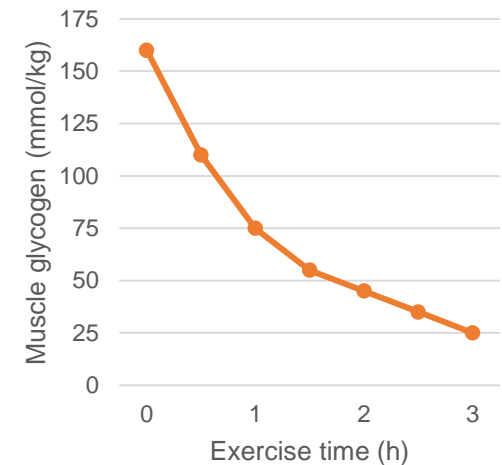
- Total volume and overall intensity
- Dry Land conditioning – duration and type
- Key objectives and outcomes at the end of the week
- Commitments out of the water
- Different length pools
- Space available (swimmers per lane)
- Importance of Rest Days

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

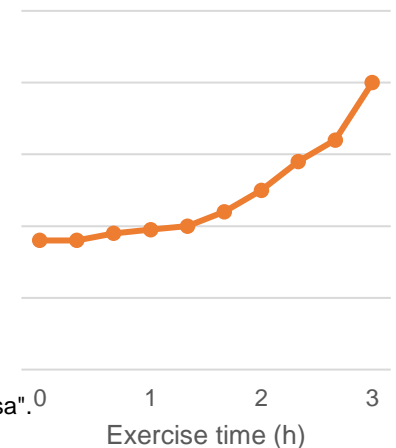
Muscle Glycogen

- The top graph shows that a hard 2 hour session will deplete a large amount of muscle glycogen
- It will take 24-48 hours to replenish stores (individual)
- High glycogen levels are necessary for quality training sets

Gastrocnemius muscle



Perceived exertion



Age Group Training Week

- Age group swimmers can recover relatively quickly
- This is an optimum time to increase volume and intensity of training whilst retaining great stroke techniques
- Swimmers should be able to do one hard training set every day (vary stroke, kick, swim, equipment, rep distances)
- Maintain a focus on technical skills during the increase in training load (volume x intensity)
- Use Race Pace training as an educational tool



**Share one of your own weekly plans with the group.
Consider the information you have received so far.**

Would you make any changes?

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

Constructing the Training Unit (Session)

1. Land-based dynamic flexibility warm up
2. Warm up/Prep set – muscular and neuromuscular preparation
3. Main Set – Drills/skills
 - a) Exercises of high technical/coordination level to induce conditioning adaptations
 - b) Stroke count/rate, lactate production, sprint or technique training
4. Short recovery sets
5. Sub set – swimming inducing conditioning adaptations
 - a) Longer endurance sets (if physically ready)
6. Swim down
7. Land-based stretching



Fina

WATER IS OUR WORLD



Planning Considerations for Age, Youth and Senior Swimmers

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".



**Would anybody like to share their season plan with us?
Can you talk about your weekly programme, what does
your week look like?**

Movement Literacy (Learning to Move)

ABC's

Agility

Balance

Coordination

Speed

RJT

Running

Jumping

Throwing

KGB's

Kinaesthetics (Feel)

Gliding

Buoyancy

Striking (Body)

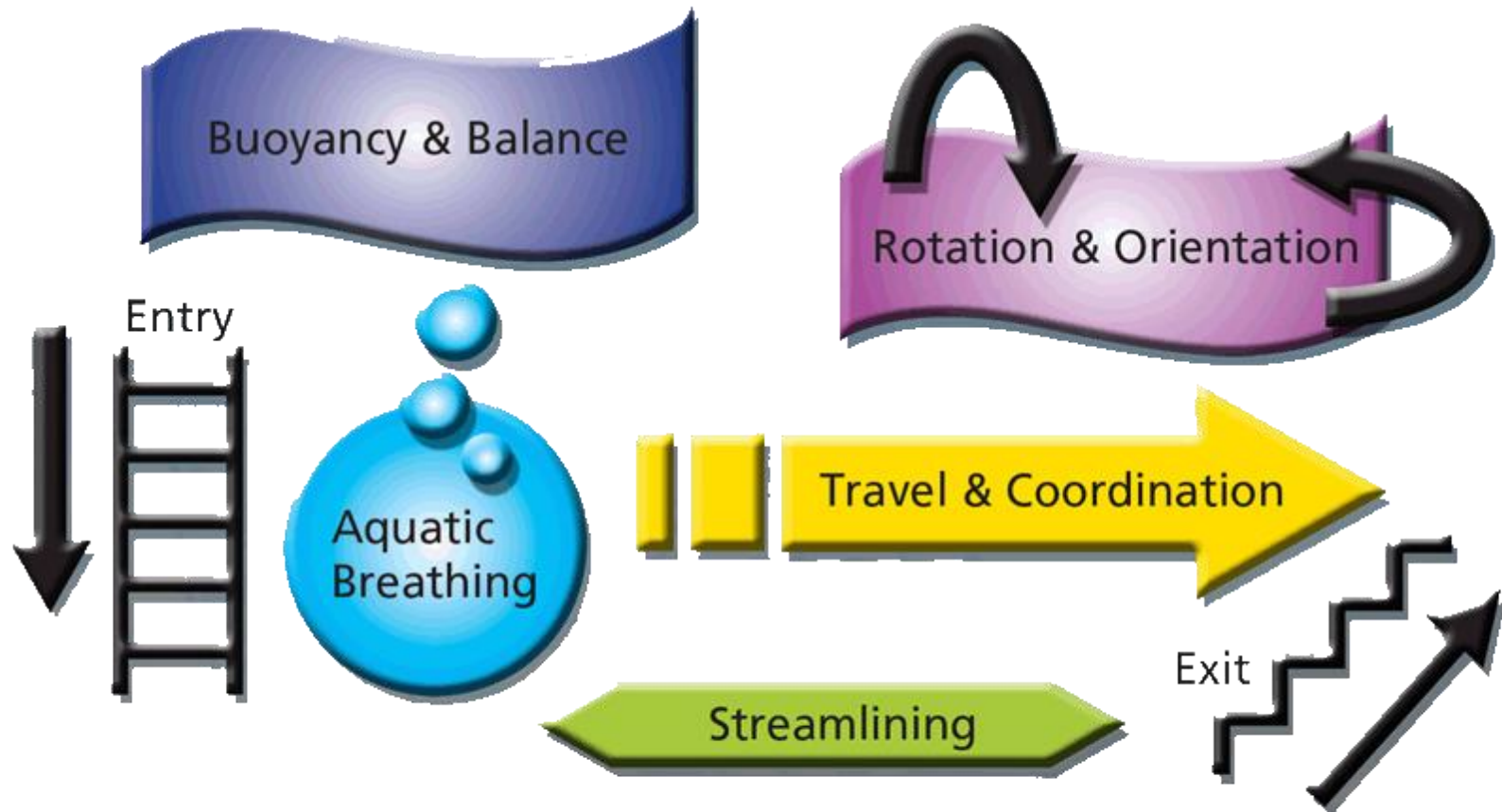
CK's

Catching

Kicking

Striking (Implement)

Core Aquatic Skills



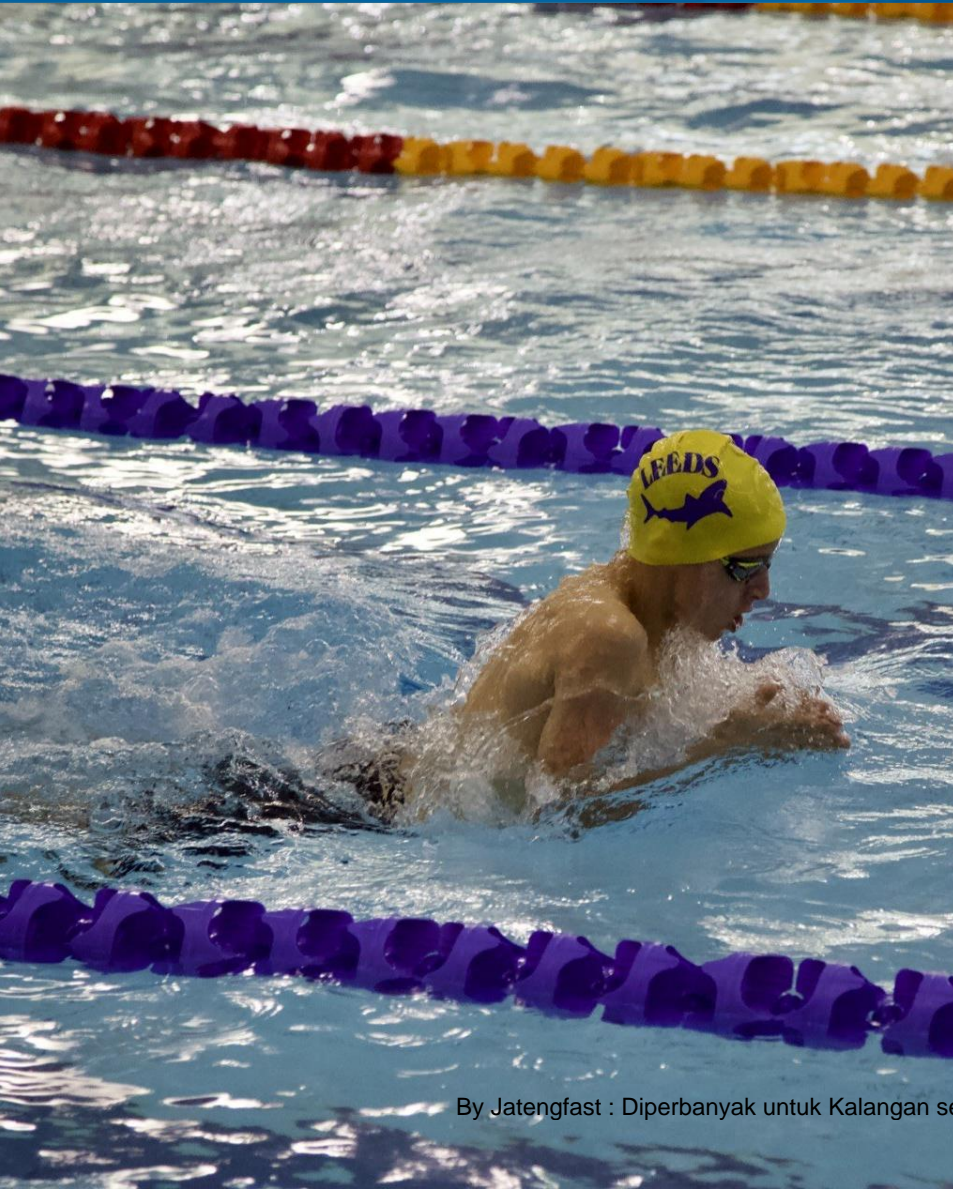
Swim Skills

- Children produce less lactic acid so anaerobic activity responses are much higher than in adults. However, tough anaerobic training has limited effect on children as they have little anaerobic capacity
- Important that we are focusing on:
 - Core Aquatic Skills/Technique development
 - Basic speed development
 - All aerobic endurance is developed through skill development/simple speed elements
 - Fun and games

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".



Planning Considerations



Training to Train

- Puberty is taking place
- **Measuring and monitoring** of athletes growth rate is a vital aspect of your coaching
- Increase in developmental (growth) hormones
- Increase in efficiency of muscles to produce energy
- Cardiovascular system becomes more efficient - more energy produced aerobically and anaerobically

Training to Train

- Gradual loading of low intensity training volume, alongside the development of sport specific skills
- Period for accelerated adaptation and development opportunities e.g. aerobic and strength gains ('Potential period of trainability')
- Monitoring the Peak Height Velocity (PHV - the adolescent growth spurt)
- Development of basic lifestyle, tactical and psychological skills

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".





Training to Compete

- Developing higher volume with increasing intensity
- Focusing on individual strengths and weaknesses
- Refining technical/tactical skills specifically to individual needs
- Low pressure, skill learning in the competitive environment

Training to Win

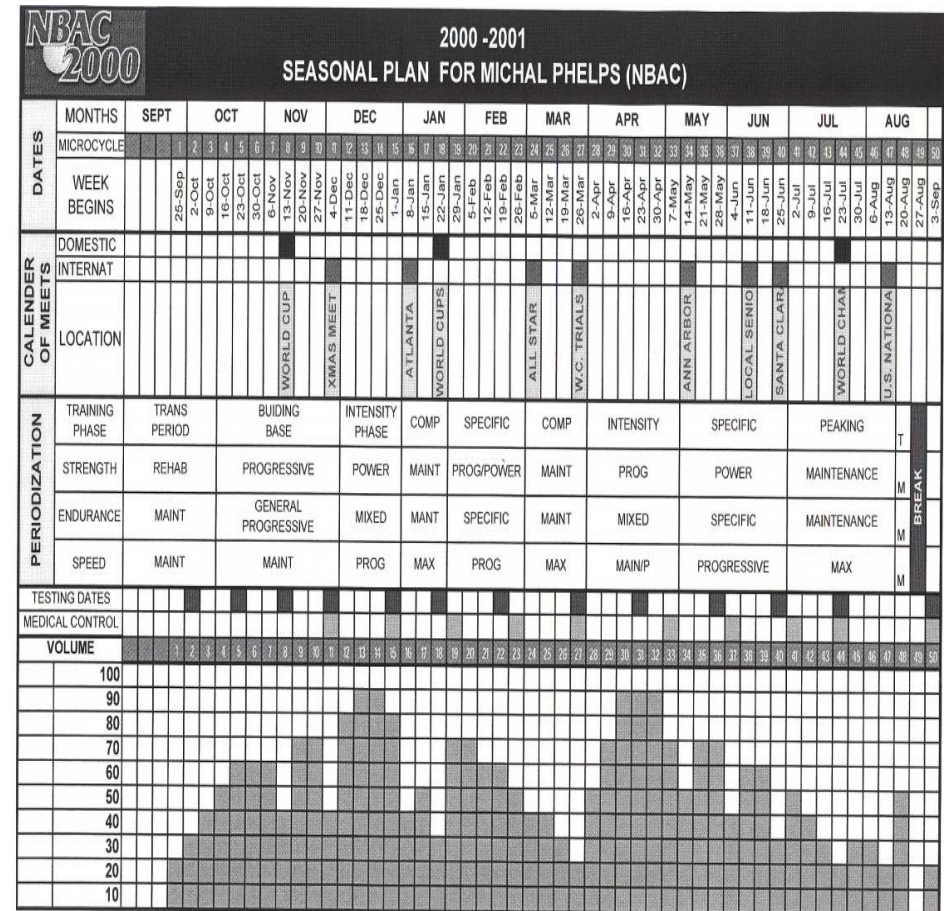
- Event specialisation and training for optimum competitive performance enhancement
- Competitive environment focused
- Method of planning will be specific to swimmer and their training programme
- Optimising the athlete!

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".



Season Long Process

- Successful Youth swimming is all about planning a periodised approach that will give the **best performance at the season 'benchmark meet'**
- The ability to swim fast at the end of the season will largely depend on work **early season** to provide **base** and correction of outstanding technical issues
- This preparation/progression should be **systematic and aged related**



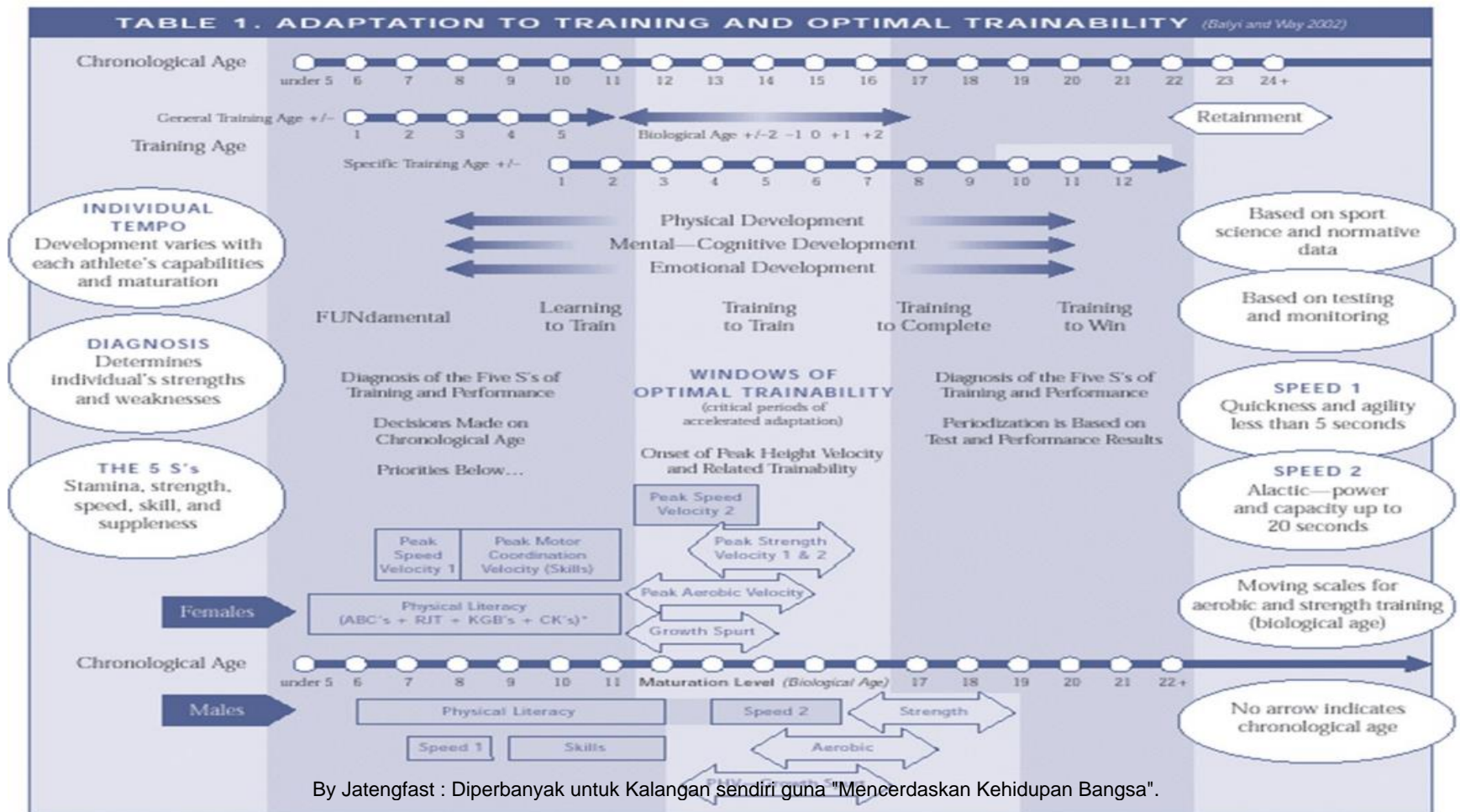
Audio Clip of Bob Boman Explaining Seasonal Training: [Real Player](#) [mp3](#)

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

Season Long Process

- **Training To Train and above** it is essential that athletes are aware of their **race model**, this allows the coach and athlete the opportunity to focus on where key improvements are to be made.
- The components of the model forms the basis for pre and post race discussion and focus around race tactics, **the older the athlete becomes 'race simulation' becomes an integral part of both the planning and training process.**
- Training at the correct intensity levels will vary from Age to Youth swimming, the older and more mature a swimmer becomes the capable they are of coping with more intense work provided that base level fitness is at the required standard

Windows of Opportunity



Windows of Opportunity

- **Endurance** – Optimal trainability occurs at the outset of PHV, aerobic training is recommended before swimmers reach PHV
- **Strength** – Optimal trainability for girls is immediately after PHV, for boys it is 12-18 months after PHV
- **Speed (Movement)** – For boys the first speed window occurs between 7-9yrs and the second between ages of 13-16yrs. For girls 6-8yrs and second window 11-13yrs

Windows of Opportunity

- **Skill** – Optimal skill training from the outset of the FUNDAMENTAL stage of ADSP, through to 11yrs for girls and 12yrs for boys
- **Flexibility** – Optimal trainability for flexibility for both boys and girls occurs between the ages of 6 -10 yrs of age
- **Special attention** to flexibility should occur through PHV

Physical Considerations

- **Growth and Development** – Chronological age is not a good indicator of athletic development, between the ages of 10-16, there is a wide variation of development (Physical/Cognitive/emotional)
- Prior to the onset of the growth spurt children on average grow about 2.5 inches per year, and gain about 2 kilos (5 pounds) in weight per year.
- **Differences** – Athletes of the same age can vary as much as 5 biological years especially during adolescence. Therefore, with two 11 year old swimmers, one may be 10yrs and the other 15yrs, biologically. Think of these factors when designing training
- Training if possible should be adjusted to the development stage (Biologically)

Physical Considerations

- **Aerobic Capacity – VO2 Max**, the ability to take in transport and utilize oxygen, is the common parameter to measure aerobic capacity.
- **VO2** shows significant growth from 11-13yrs for females and 12-14yrs for males. This time frame should be maximised in training to develop the swimmer long term. Longer repeats, longer competitive events at this early stage in a swimmers career.

Physical Considerations

- **Muscular Strength, Power and Endurance** – Prior to puberty strength gains come from neuromuscular changes, not changes in muscle size
- With the onset of puberty we see strength gains due to changes in muscle size. (predominantly males)
- As muscle size increases so does strength, but typically there is a period of time between size/mass increases and the maximum effect of strength gains in young swimmers
- The age frame of 14-15yrs is when peak gains occur.

Age Group Programme

It is the **most important** stage of athlete development

- Periodise work for progression and best training effect/increase in volume and intensity progressively/be able to monitor progress
- Development of aerobic capacity (anything up to 30bbm)
- Development of basic speed (short repetitions, longer rest)
- Ingraining of work ethic/discipline
- Lots of stroke efficiency/skill work
- Correlation between SC – SL - SR
- 200/400m Individual medley based
- 2 x 24 Week training cycles / 3 x 16 week cycles

Age Group Programme

- Developing a weekly template
- Work on the basis of three key areas of work:-
 - **Aerobic Conditioning**
 - **Technique Development**
 - **Basic Speed**

Age Group Programme

- Include three key sets per week spaced no closer than 48 hours apart (for optimal training benefit)
- Place a key set on the weekend – replaced by competition
- Work on the basis that with young age groupers, their attention span will deteriorate significantly after 30-45 minutes (plan sets on the basis of 2,000 – 2,700m)
- Attach a 'skill' requirement to all aerobic development sets
- Limit the number of very short interval sets – does this compromise technique?
- Utilise heart rate monitors as a simple but effective monitoring tool
- Insist on some flexibility work post each session as part of recovery
- Encourage your athletes to start refuelling and rehydrating immediately after a workout

Age Group Programme

- **9 -12 years of age:**
- Generic speed (Build through aerobic and skill efficiency)
- Develop slow motion perfect technique, then apply progressive pressure
- Aim is to hold stroke count and time, to swim repeats as efficiently as possible
- Progress this to descending time holding stroke count
- Train speed up to 25metres no longer (Above 35 metres is race pace training)
- Skill and technique at all times in aerobic training.
- Kick efficiency is **ESSENTIAL** for conditioning and race requirements
- ROM very important to coincide with PHV

Age Group Programme

- There has to be an Aerobic base during the Age Group years so that athletes acquire sustainability and can be at their best as seniors.
- 14 years and under aerobic training should be individualised to get swimmers to train at around 160 BBM, (A2) this should be done through progressive distance/progressive intensity approach to training.
- A coach can manipulate and mould a swimmer at this stage/age of development, 12yrs – 16yrs should be competing in 800/1500 FC 400IM to provide the base to specialise at a later date.

Age Group Programme

- Aerobic base can also be developed by Kick/Pull using over-distance multiple repetition training. (variety)
- Build in key test sets at this age, these to incorporate aerobic capacity and swimming efficiency, include kick in your test procedures
- Over speed work (faster than race speed) use fins, short distance to a maximum of 25 metres 1:5 work/rest ratio.(FES)
- Major stroke changes at a set time in the annual training cycle (early season).
- Aim for consistency, evaluate, progress as improvements occur
(Change in repeat training times through season as improvement is made)

Age Group vs Youth / Senior Swimming

- Age Group: recovery time shorter
- Education vs. refinement
- General vs. specific
- Technique is critical
- Capacity over power
- Range in speed & intensity: not as great

Youth / Senior Swimming

- Coping with more Intensity/ Race Simulation to target Race Outcomes.
- Development of aerobic capacity/power (**AT into Vo2**)
 - AT** - 20/30 BBM Optimal Intensity to develop Aerobic capacity
 - VO2** - 5-20BBM Aerobic overload high intensity aerobic power HR Sets
- Develop basic speed into race specific work (Race Pace/FES/BES)
- Encourage self regulation – be prepared to step in, raise the standards
- Maintain stroke efficiency but start to introduce more stroke rate work (race models)
- Still medley based but start to identify specialist strokes
- 3 x 15/16 week training cycles
- Racing 8/9 times long course before target summer meet
- Develop one thing at a time (you will need to do it 2-3 times a week for 3-4weeks)
- Incorporate more rest/recovery, will need this to cope with increased intensity
- Set work around best athletes, everyone else has to keep up!

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".



How does the information you have just received impact on your current programme? Do you have any reflections? Will you change the way you plan?

By Jatengfret : Diperbanyak untuk kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

Prepare to share with the wider group.



Fina

WATER IS OUR WORLD



Fina

WATER IS OUR WORLD

Coaching Breaststroke



Using the BLABT model, outline some key technical aspects for each area.

Body, Legs, Arms, Breathing, Timing

Share with your colleagues.

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

- Breaststroke the most individual of all the strokes
- Starting point is feet and high degree of ankle flexibility
- Very few World Class Breaststrokers are arm dominant
- Acceleration through both pull and kick

- Timing and streamlining is crucial
- Speed is at extension
- Same basic principles apply as other strokes;
Maximise the propulsive force, minimise the resistive forces, stay streamlined as long as possible.
- Technical requirements dictate that we spend lots of time focusing on the skills of the stroke.

- Teach the narrow kick (whip)
- Reduce thigh resistance
- Poor head position or arm action can destroy the propulsion from breaststroke kick
- Elbows locked during outswEEP

Video 1 – Streamlined Kick

Video 2 – Scull → Kick

Video 3 – Recovery Drill

Video 4 – 2 Kicks → 1 Pull

Video 5 – 2 Pulls → 1 Kick

Video 6 – Fs Kick → Breaststroke Pull



Share your thoughts on some of the information received. Make any changes to your own technical model.



Fina

WATER IS OUR WORLD



James Richards

City of Leeds Swimming Club

Twitter: jmrswim

E-Mail: jmrichards@live.co.uk



FINA Development Programme 2020

**FINA Online Coaches Clinic
Jakarta, Indoensia (Online)
7th – 10th September 2020**



Fina

WATER IS OUR WORLD

Why Plan?

- Improves coach organisation
- Helps to ensure that all aspects of training and performance are considered
- Planning allows Coach to set direction for the swimmer and programme
- Allows athletes to be part of, and offer input into the planning process and the opportunity to achieve their goals and potential
- Allows Coaches (and athletes) to measure their effectiveness, as well as the effectiveness of their programme
- Motivates Coaches and athletes alike

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

Factors to Consider

- Lifestyle e.g. school, exams, holidays, family and other commitments
- Stage of Long-Term Athlete Development (skill learning)
- What is the session/ week/ month trying to achieve?
- Can you vary them – they should not all look the same!
- Time of the season
- Types of competition
- What resources are available (i.e. training location/ equipment)
- Environmental factors

Planning & Periodisation

Training to Win

High performance through training and competition

high performance

multiple periodisation

1 to 3+ competitive peaks
(depending on event)

40:60

Training to Compete

Preparation for high performance programmes

perfection

double periodisation

two competitive peaks

55:45

Training to Train

Skill/technique and fitness development

sport-specialised

75:25

Learning to Train (SwimSkills)

Development and skill/technique practice

initial

single periodisation

one competitive peak

75:25

Periodisation

There are many types of plans, ranging from one activity within a session, through to 4-year Olympic cycles. The common categories of coaching plans are:

- Long Term Plans (yearly/ annual and up to 4 years)
- A larger block of work typically 12-18 weeks (Macrocycles)
- Monthly (4-6 weeks) Plans (Mesocycles)
- Weekly Plans (Microcycles)
- Session Plans (the training unit)



Please consider the information you have received on planning...

Will this change the way you coach? What will you change? Why will you change it?

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa"



Fina

WATER IS OUR WORLD



Performance Monitoring



In groups, discuss the importance of testing.

Why do you think it is important to test?

What are some of the things you would want to test?

Do you have any examples?

By Jatengfast - Diyekbanyak untuk Kemandirian dan Ungung Ulini Berdaskan Kehidupan Bangsa".

“...testing does not answer all the problems a coach faces in daily training, but it can reduce the amount of mistakes and make training more effective.”

Madsen and Lohberg (1987)

Why Test?

- Are the swimmers improving?
- What aspect of performance?
- By how much?
- Objectivity?
- Is it a relevant test?
- Monitor
- Log books
- Sessions



Methods of Testing

- Training Sets
- Specific Tests
- Both are important methods in evaluating the programme



Considerations

- Validity
- Is it relevant to the activity/duration? E.g. endurance test, don't set short reps/sets
- Accuracy, e.g. electronic timing – Gold Standard
- Reliability
- Same results if 2 people tested
- Same conditions, different place.



Performance Monitoring



Considerations

- Tests should be appropriate to the age and stage of each swimmer
- Tests should be practical and easily conducted with larger groups
- Get assistance with recording and if necessary split the group
- Swimmers can record their own times / HR using laminated sheets

Set: _____ Date: _____

Names: Becky

Rep	LC	SC	PM	Coach:
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Av				

Names: En

Rep	LC	SC	PM	Coach:
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Av				

Names: Tom

Rep	LC	SC	PM	Coach:
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Comments: _____

© Mike Peyrebrune 2009



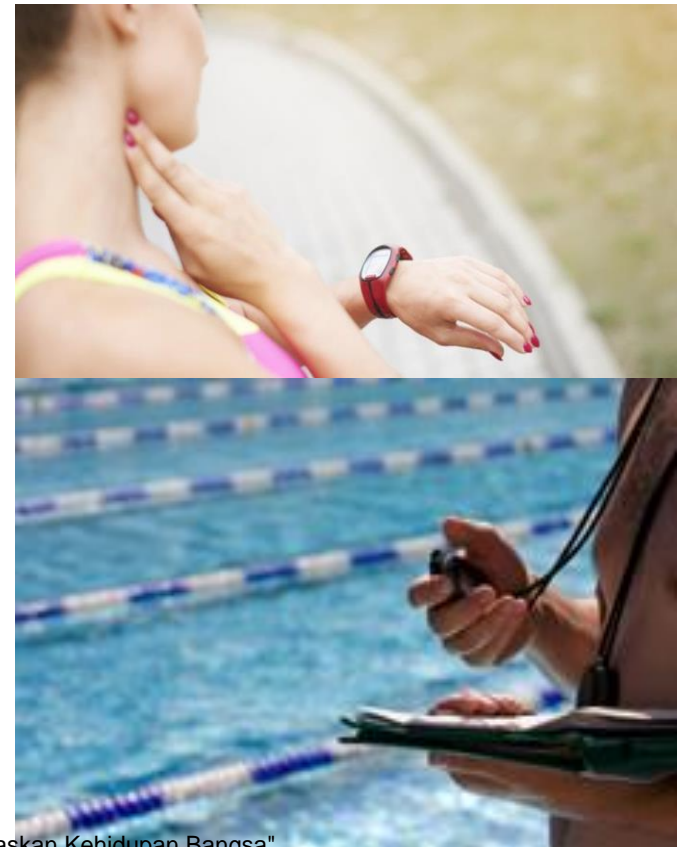
Take a look at the selection of tests (next page). Share your ideas about these tests.

Do you use any of them already?

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

Examples of Testing

- Speed
- Sprint Speed – 25m
- Starts (15m) and Turns (5m/10m)
- Endurance Test
- Step test or training test set (20 x 100?)
- Local Muscular Endurance
- Kick Set



Frequency of Tests

- Testing too frequently can be boring and de-motivate, rather than motivate swimmers
- The differences in a test should be meaningful and are usually seen over a period of 4-6 weeks
- Testing at the beginning and end of a meso-cycle is usually a good guide
- Usually you should only test training aspects that you have been working on
- **Use competition race data to supplement your training data and test sets**



Using your current plan for the season, consider adding some regular testing. Share with the group:

Which tests you will use?

When/How often you will use them?

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

Performance Monitoring

Make testing work for you... don't become a slave to testing!



Fina

WATER IS OUR WORLD



Fina

WATER IS OUR WORLD

Coaching Butterfly



Using the BLABT model, outline some key technical aspects for each area.

Body, Legs, Arms, Breathing, Timing

Share with your colleagues.

By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

- Build a technique to withstand the complex/difficult nature of the stroke and race requirements (200m events)
- Foundation of the stroke is based around core strength, flexibility training, endurance training, high quality repetition (integrate recovery swims for both rest and maintaining efficiency), technique work
- Combine power and balance within the stroke

- Coach head to toe movement, wave type action
- Hip action essential for effective kick, propulsive finish to the wave.
- Target minimum upper body movement, with 2 kicks to each arm cycle.
- Relaxed recovery, landing of arms and head must be simultaneous.

- Don't teach the 'major-minor' kick. It will or won't happen!
- Soft hand entry.
- Make use of the 'full paddle'. Shoulders lean into the pull!
- Slow to fast – and past the hips!
- Breathe low and forwards (extend the chin)

Video 1 – Streamlined Dolphin Kick

Video 2 – Dolphin Kick (Arms by Side)

Video 3 – Dolphin Kick (On Side)

Video 4 – 1 Kick → 1 Breath

Video 5 – Fly Underwater Pull

Video 6 – Biondi Drill

Video 7 – Fly Pull + Freestyle Kick

Video 8 – 8 Kicks → 1 Pull

Video 9 – 6 Kicks Under → 4 On Top



Share your thoughts on some of the information received. Make any changes to your own technical model.

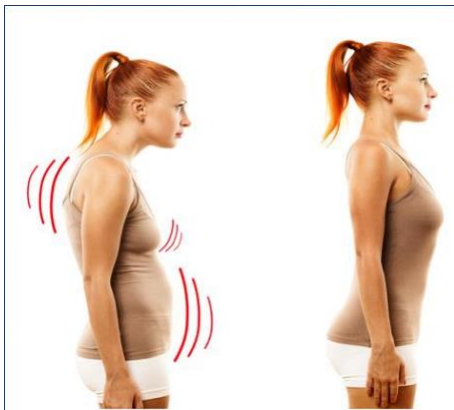


Fina

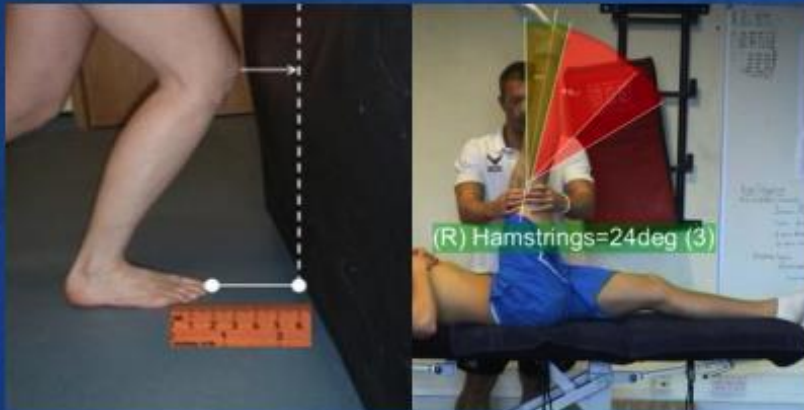
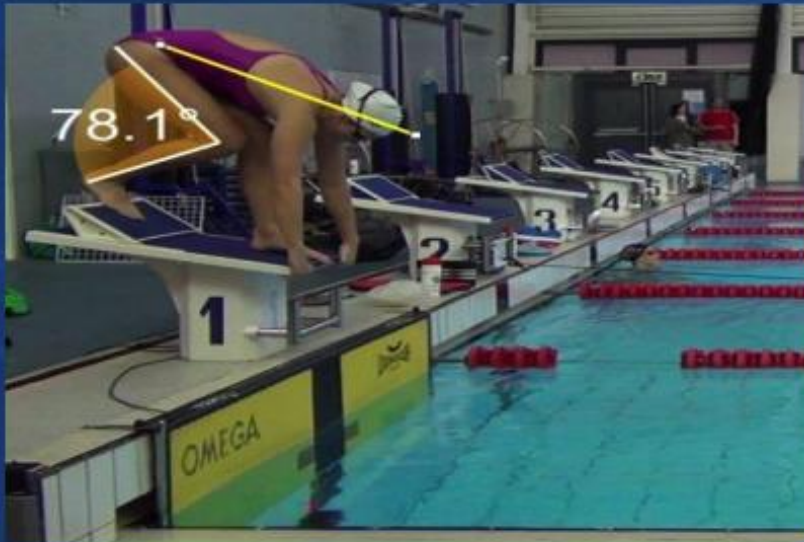
WATER IS OUR WORLD

Pre & Post Pool Routines

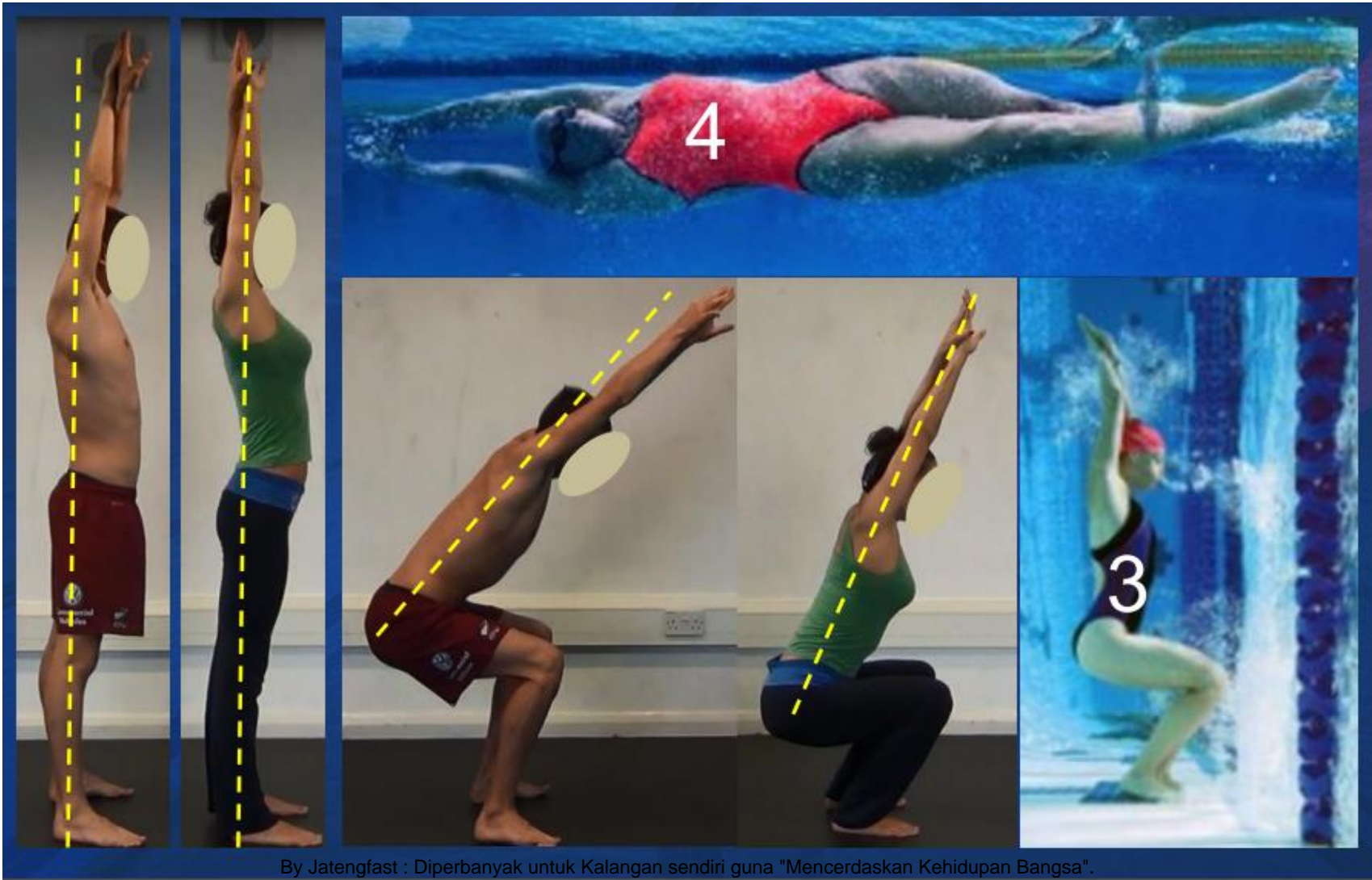
- What is the purpose of pre & post pool routines?
- Prevent injury
- Address common issues (posture)
- Improve athletic performance



A Practical Example



Another Practical Example



By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

R-MAP

- Raise
- Mobilise
- Activate
- Prime

www.swimming.org

Search: 'Land Warm Up'

By Jatengfast : Diperbanyak untuk kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

The screenshot shows a web browser window with the address bar displaying 'Land Warm Up For Swimm...'. The website has a green header with navigation links: 'Get Started', 'Compete', 'National Events', 'Develop', 'Coaches', and 'Parents'. A search icon is in the top right. Below the header is a large image of swimmers doing a high-five warm-up. To the right of the image are social media share buttons for Facebook, Twitter, and YouTube. Below the image is the title 'Land Warm Up For Swimmers' and a paragraph: 'An effective swimming specific warm up is vital if you want your swimmers to perform to their best in the pool.' This is followed by another paragraph: 'We have worked with British Swimming to produce a guide to pre-pool routines for swimmers aged approximately 12 to 16.' Below this is a list of four steps: 1. Raise, 2. Mobilise, 3. Activate, 4. Prime. Further down, it says 'Swimmers should perform three to five repetitions for between two and four exercises of each sub-stage.' and 'For the prime and activate stages, once a swimmer is able to complete all exercises with good technique and control, they can move to the next'. On the right side of the page, there is a 'Swimming Coaching Links' menu with items: Home, Qualifications, Find A Job, Symposium, Off The Blocks, and Swimming Science. Below this is a 'ProSwimwear' advertisement with the text 'AMAZING PRICES' and a 'SHOP HERE' button. At the bottom right, there is a 'Train to become a qualified swimming coach' section with a search bar, a postcode/city field, and a 'Search' button.

Land Warm Up For Swimmers

An effective swimming specific warm up is vital if you want your swimmers to perform to their best in the pool.

We have worked with British Swimming to produce a guide to pre-pool routines for swimmers aged approximately 12 to 16.

The warm ups should be performed in the order:

- 1 Raise
- 2 Mobilise
- 3 Activate
- 4 Prime

Swimmers should perform three to five repetitions for between two and four exercises of each sub-stage.

For the prime and activate stages, once a swimmer is able to complete all exercises with good technique and control, they can move to the next

Swimming Coaching Links

- Home
- Qualifications
- Find A Job
- Symposium
- Off The Blocks
- Swimming Science

ProSwimwear

AMAZING PRICES

SHOP HERE

Train to become a qualified swimming coach

What are you interested in?

Postcode or City

Use current location Search

Static Stretching

- Head to toe
- Toe to head
- Physio Screening
- Regular Testing



PREHABILITATION EXERCISES



Mobility & Stability

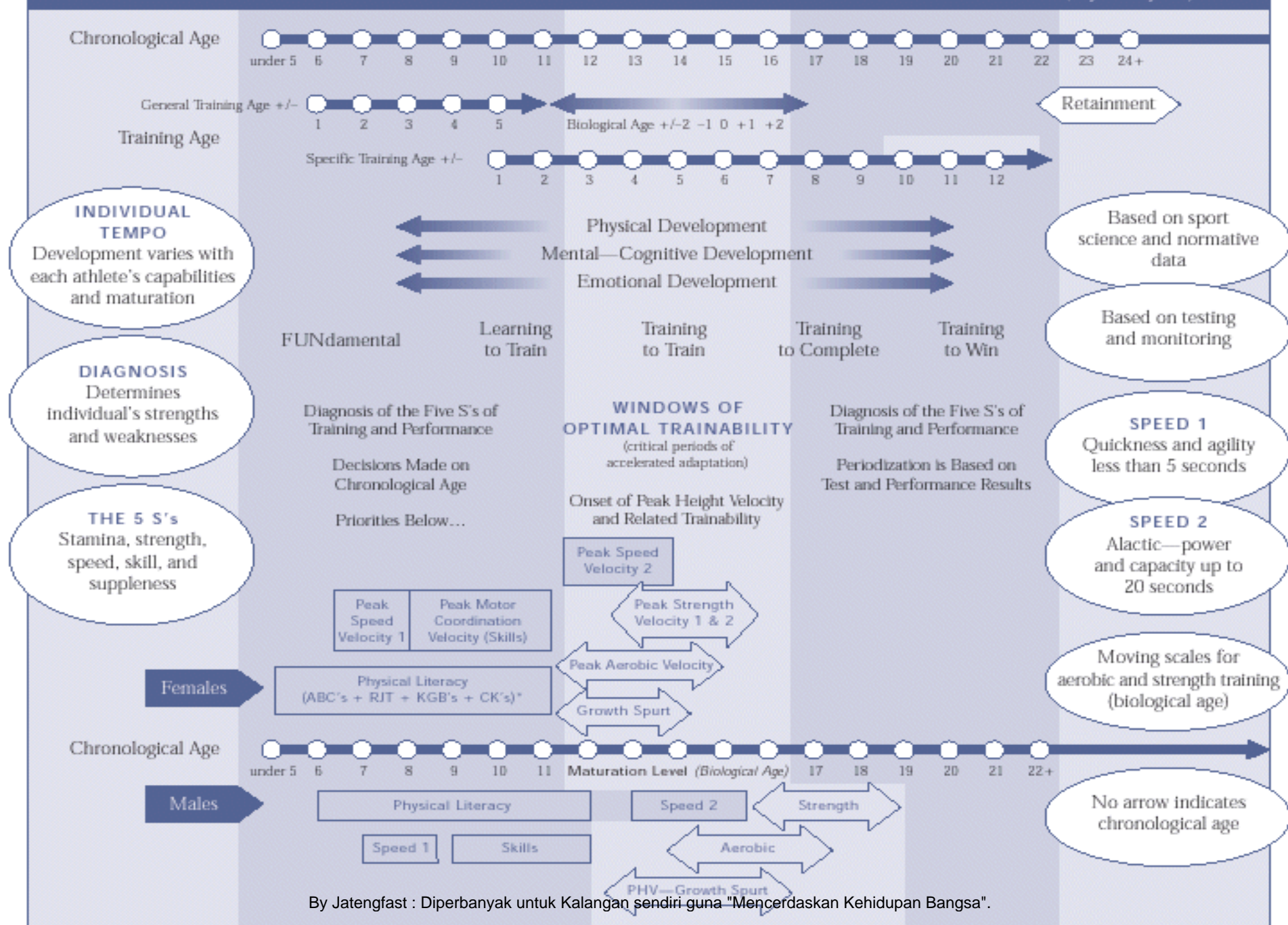
Controlled
Movement

Loading &
Performance

3 main movements:

1. Press Up
2. Squat
3. Lunge

TABLE 1. ADAPTATION TO TRAINING AND OPTIMAL TRAINABILITY (Baiji and Way 2002)



By Jatengfast : Diperbanyak untuk Kalangan sendiri guna "Mencerdaskan Kehidupan Bangsa".

*ABC's = Agility Balance Coordination Speed + RJT = Run Jump Throw + KGB's = Kinesithesia Gliding Bouyance Striking with objec + CK's = Catching Kicking Striking with body



Fina

WATER IS OUR WORLD



James Richards

City of Leeds Swimming Club

Twitter: jmrswim

E-Mail: jmrichards@live.co.uk