Dr Michael Peyrebrune

PLANNING CONSIDERATIONS AT DIFFERENT STAGES OF THE SWIMMER DEVELOPMENT PATHWAY

My Background

Loughborough University

- International Swimmer for Britain
- International Coach
- England Director of Swimming
- PhD in Exercise Physiology
- Lead Physiologist: EIS & British Swimming
- British Swimming Technical Lead

Currently

- Loughborough University:
  - High Performance Coach
  - Research Fellow

Overview

- Context
  - The Long-term Plan
- Planning Process
  - Work backwards from the end
  - Macro/Meso/Micro Cycles
- Age Group considerations
  - Example training weeks
  - Set construction & variety
- Education
  - Pacing
  - Kicking
  - Race models
  - Coaching character

Similar Systems to 'LTAD'

British Swimming

- Optimal Athlete Development Framework (OADF)

UK

- Talent or Performance Pathways Programmes (UK Sport)

Consultants

- Athlete Development Support Pathway (ADSP)

USA

- American Development Model (ADM)

Australia

- Foundations, Talent, Elite, Mastery (FTEM)

Canada

- Appropriate Athlete Development (AAD)

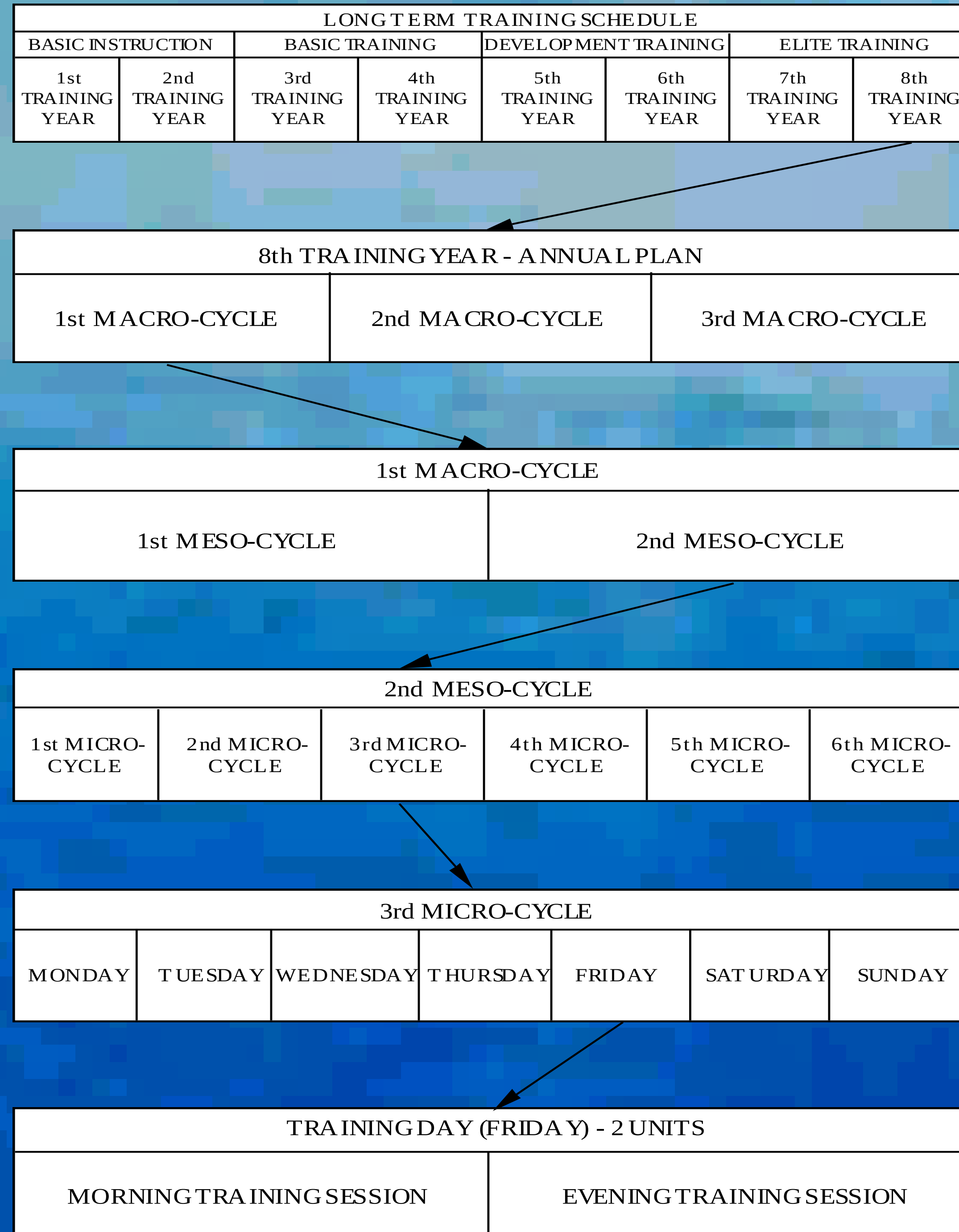
<u>Key Principle at all stages</u>

"Establish Outstanding Technique first and then condition it"


TRAINING &
PERFORMANCE
STRATEGIES
SPRINTING
PACING
ENDURANCE
SKILL
STARTS
TECHNIQUE
TURNS
EMOTION
PASSION
SELF CONTROL
ENERGY
PSYCHOLOGY
COMMITTMENT
CONFIDENCE
FOCUS
TRAINING ABILITY
ATTEND
WORK
TECHNIQUE
ENVIRONMENT
COLD
HEAT
ALTITUDE
PHYSIOLOGY
NUTRITION
HEALTH
FITNESS

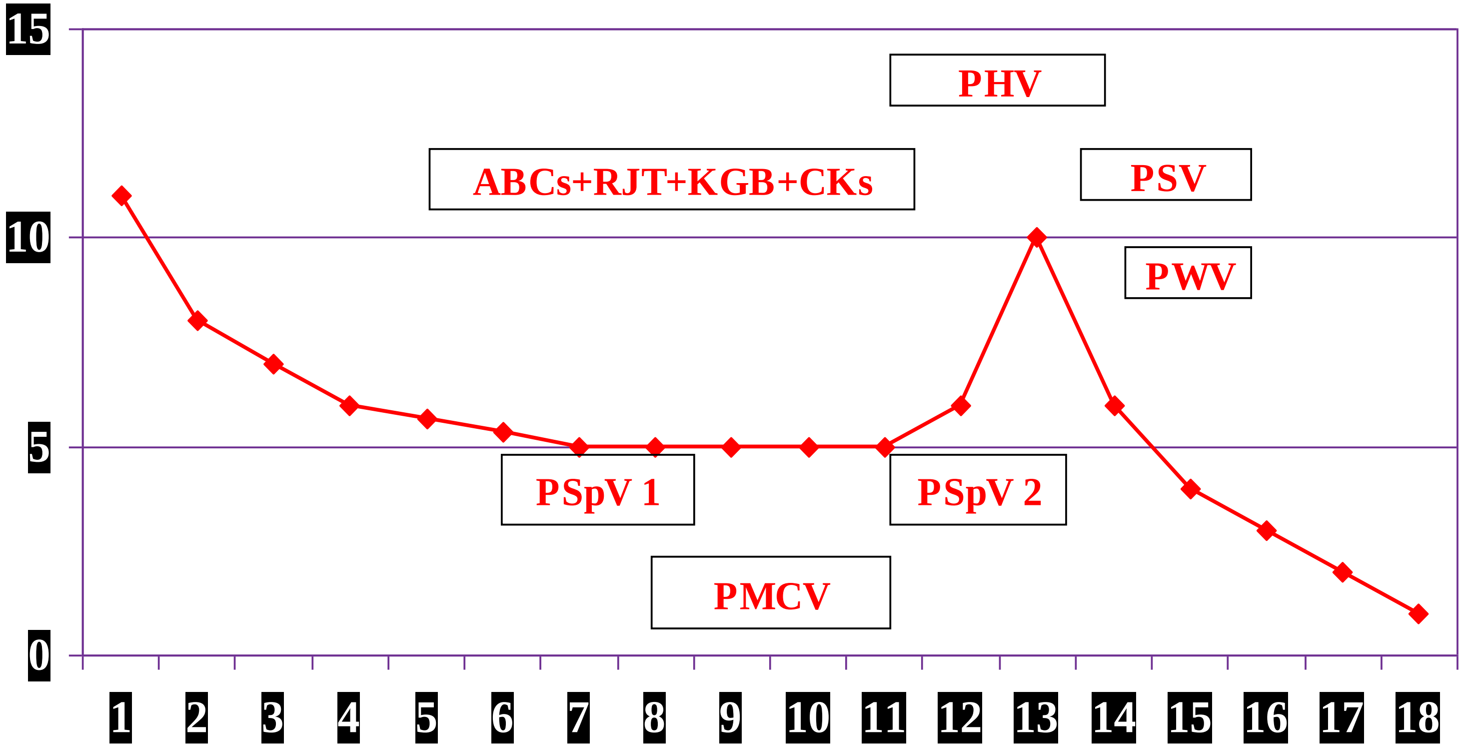
10 Years?

‘Long Term Athlete Development’ is about achieving **optimal** training, competition and recovery **throughout** an athlete’s career, particularly in relation to the important growth and development years of young people



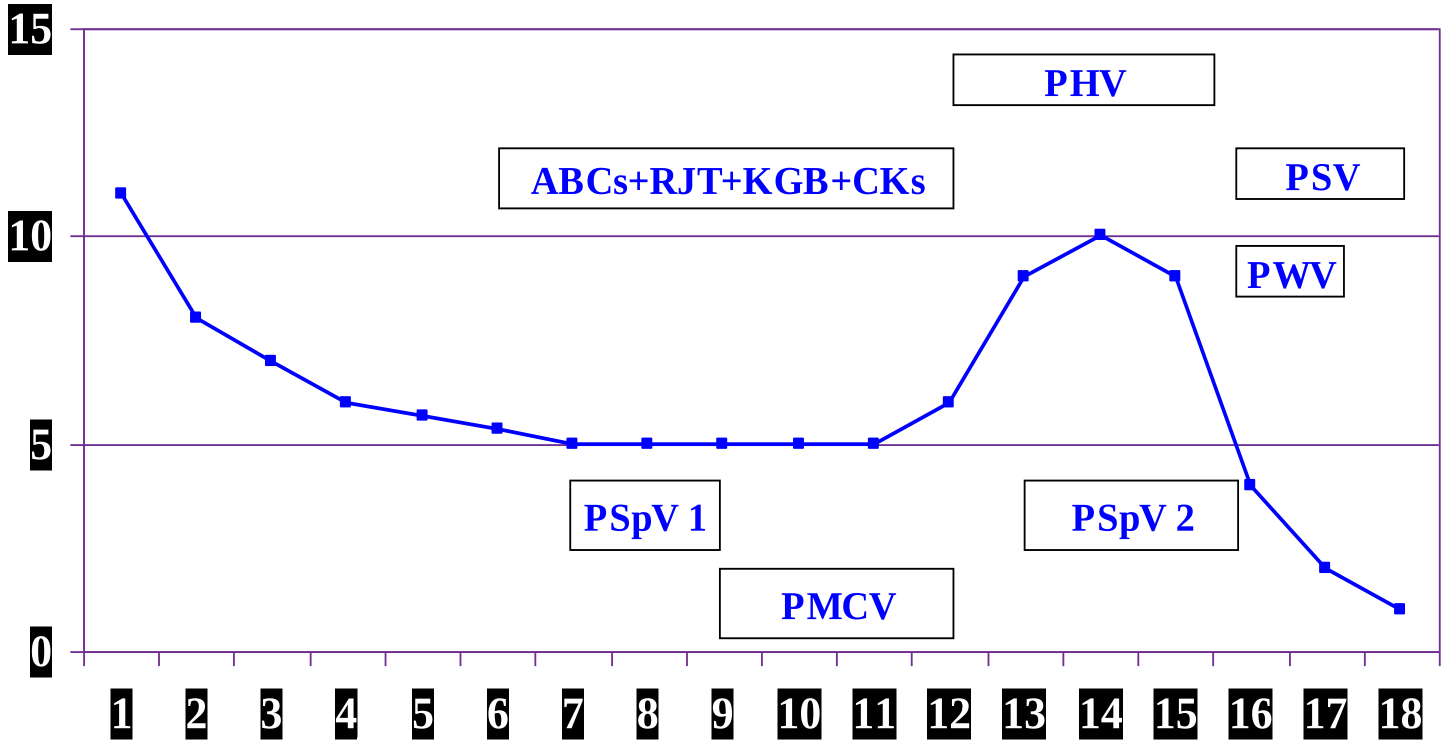
CRITICAL PERIODS OF TRAINABILITY (FEMALE)

(Balyi and Hamilton, 1999)



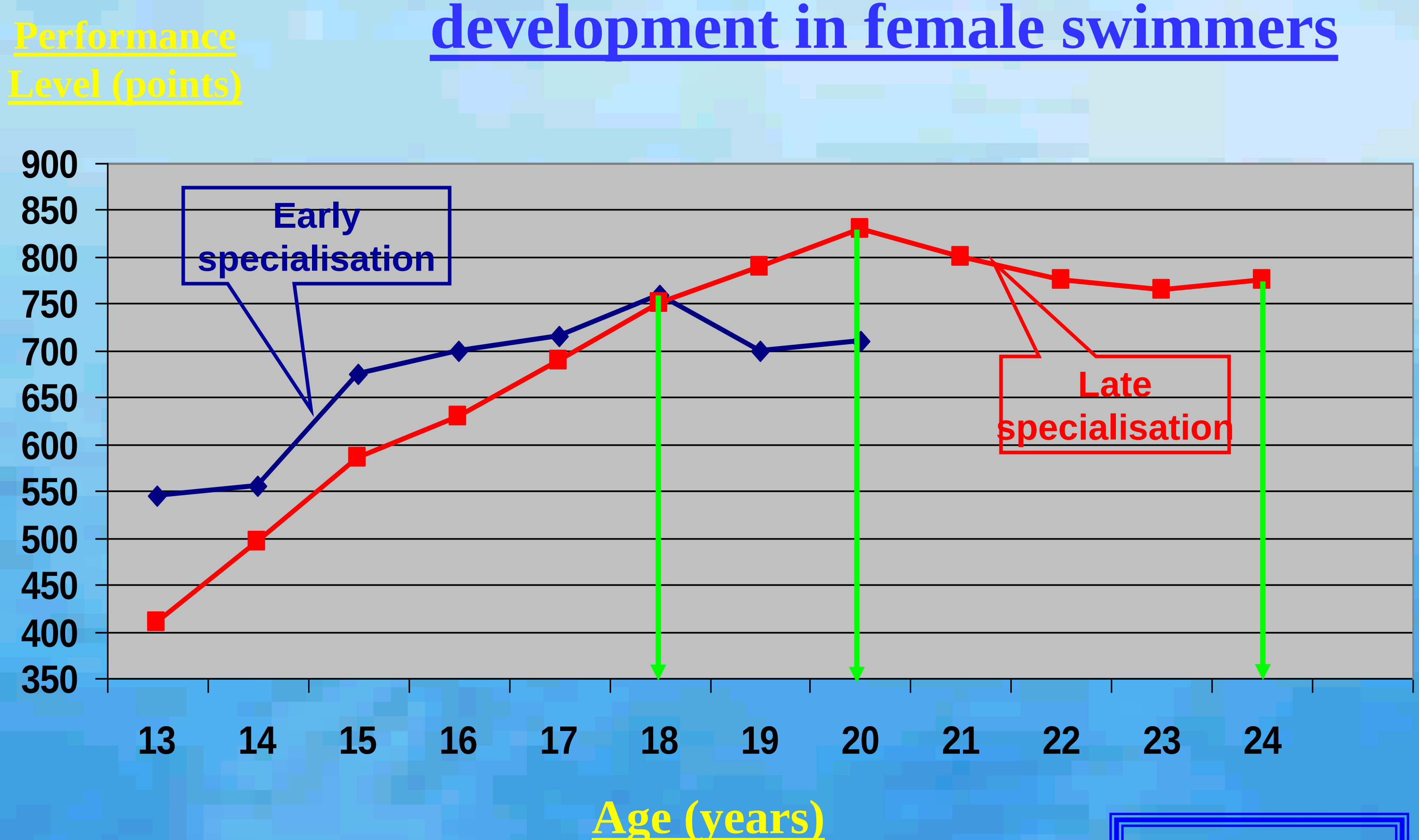
CRITICAL PERIODS OF TRAINABILITY (MALE)

(Balyi and Hamilton, 1999)



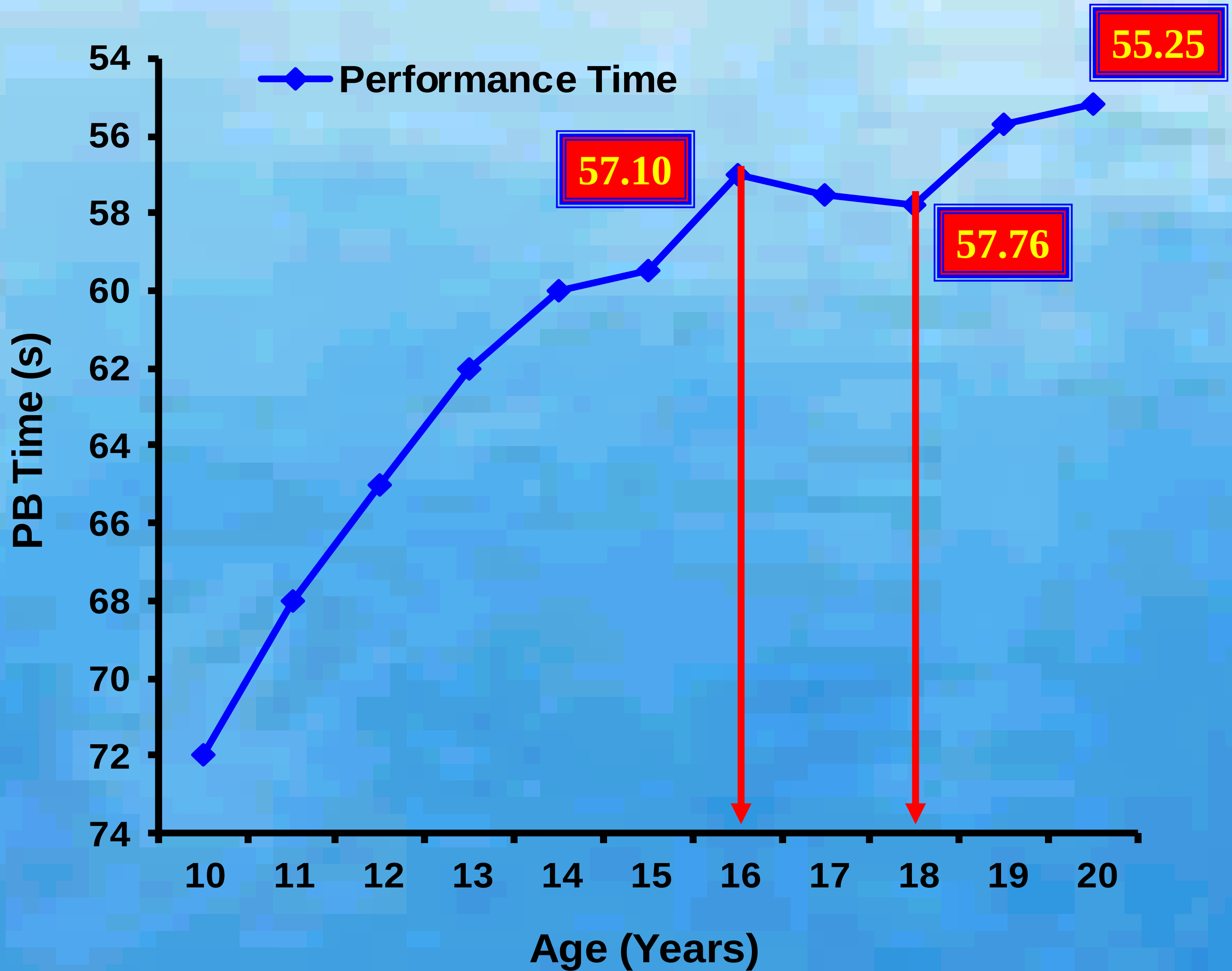
Loughborough University

Average performance development in female swimmers

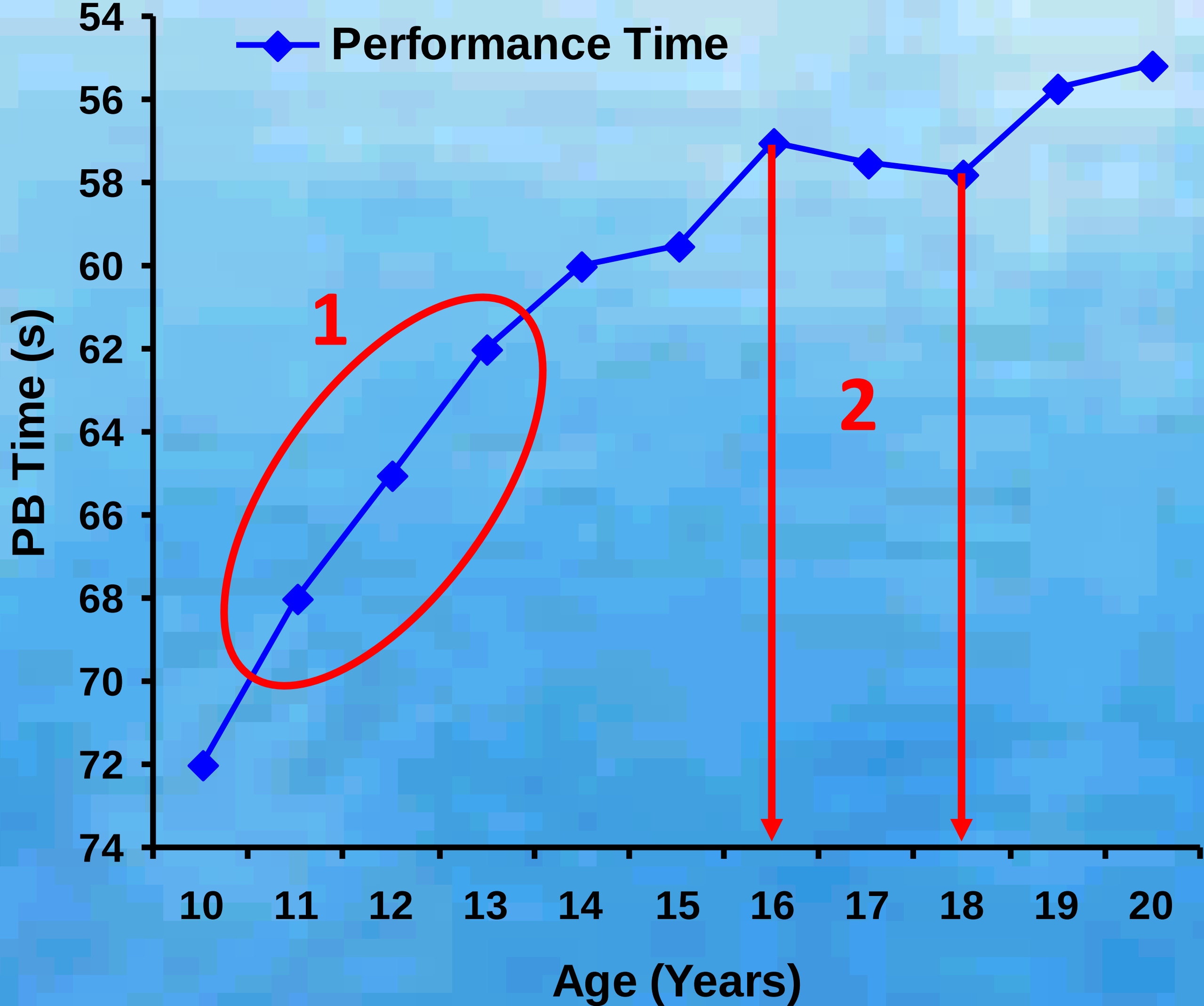


Feige (1973)

Performance Improvement History



Performance Improvement History



Long Term Planning

2024-2025
SEASONAL PLAN

	MONTH	SEPT					OCT				NOV				DEC					JAN				FEB				MAR					APR				MAY					JUN				JUL				AUG				
DATES	MICROCYCLE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
	WEEK BEGINS	03-Sep	10-Sep	17-Sep	24-Sep	01-Oct	08-Oct	15-Oct	22-Oct	29-Oct	05-Nov	12-Nov	19-Nov	26-Nov	03-Dec	10-Dec	17-Dec	24-Dec	31-Dec	07-Jan	14-Jan	21-Jan	28-Jan	04-Feb	11-Feb	18-Feb	25-Feb	04-Mar	11-Mar	18-Mar	25-Mar	01-Apr	08-Apr	15-Apr	22-Apr	29-Apr	06-May	13-May	20-May	27-May	03-Jun	10-Jun	17-Jun	24-Jun	01-Jul	08-Jul	15-Jul	22-Jul	29-Jul	05-Aug	12-Aug	19-Aug	26-Aug	02-Sep
COMPETITIONS	NATIONAL																																																					
	MAJOR																																																					
	LOCATION/EVENT																																																					
PERIODISATION	TRAINING PHASE																																																					
	STRENGTH																																																					
	ENDURANCE																																																					
	SPEED																																																					
	GENERAL DRYLAND																																																					
	SSSM DELIVERY																																																					
TESTING DATES																																																						
VOLUME		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
	80																																																				
	70																																																				
	60																																																				
	50																																																				
	40																																																				
	30																																																				
	20																																																				
	10																																																				
	40																																																				
TESTING DATES																																																						
TESTING DATES																																																						

Olympic Training Cycle 2008

Loughborough University

	Week		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Weeks to go		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	0
	Week Beginning		21-Apr	28-Apr	05-May	12-May	19-May	26-May	02-Jun	09-Jun	16-Jun	23-Jun	30-Jun	07-Jul	14-Jul	21-Jul	28-Jul	04-Aug	11-Aug
	Main Comps																	**Olympic Games**	
	Minor Comps		**Stage 1**						**Stage 2**					**Stage 3**	**20 Day**		**10 Day**		
															20th		30th	9th	
	Training Stage			1				2			3		4		5		6		
	Training Phase		Build Arobic Capacity			Increase Aerobic Capacity & Power					Develop Anaerobic Power				Taper			Race	Race
	Training Phase		Develop Good Tech & Skills			Develop Anaerobic Power					Maintain Aerobic Capacity & Power				Maintain Aerobic & Anaerobic				
Land Conditioning	Hours per week		3	3	3	3	3	3	2	2	3	3	3	2	2	2	1	0	0
	Type																		
	Stretching		5x30	5x30	5x30	5x30	5x30	5x30	5x30	5x30	5x30	5x30	5x30	5x30	5x30	5x30	5x30	5x30	
	Core Strength		3	3	3	3	3	3	3	3	3	3	3	3	2	2	1	0	
	Tubing		3	3	3	3	3	3	3	3	3	3	3	3	2	2	1	0	
	Weights		3	3	3	3	3	3	1	1	3	3	3	2	2	2	0	0	
	Intensity		Induction	Build	Develop Strength & Power				Maintain		Develop Strength & Power			Reduce	Taper	Taper	Rest	Race	Race
Swimming Training	Hours per week		17½	20	22	24	24	24	24	24	24	24	20	18	16	16	14	12	12
	Sessions		8	10	10	10	10	10	10	10	10	10	10	9	8	8	7	6	6
	Type		A2	2xT	2xT	T	2xVcrit	2xVcrit	½ Vcrit	½ Vcrit	2xVcrit	2xVcrit	Vcrit	¾ Vcrit	½ Vcrit	½ Vcrit	¼ Vcrit	Racing	Racing
			2xT	Vcrit	Vcrit	2xVcrit	RPace	RPace	2xRP	2xRP	RPace	RPace	2xRP	2xRP	1xRP	1xRP	1xRP	Warm-up	Warm-up
			Vcrit	BSp	BSp	BSp	BSp	BSp	BSp	BSp	BSp	BSp	BSp	BSp	½ BSp	½ BSp	¼ BSp	Warm down	Warm down
	Volume		55	65	70	70	70	70	70	70	70	70	65	60	50	47	44	40	35
	Intensity		low	Med	Med	High	High	High	High - Racing		High	High	Med	Med	Low	Low	Low	Race	Race
Testing & Sets	Key Sets	Kick	12 x 100	6 x 200	3 x 400	12 x 100	6 x 200	3 x 400	6 x 100	3 x 200	3 x 400	6 x 200	12 x 100	8 x 100	6 x 100	6 x 100	4 x 100		
		Power R	Intro	✓	✓	✓	✓	✓	Power Paddles		✓	✓	✓	✓	✓	✓			
		12x200	on 3:00	on 3:30	on 3:30	on 3:30	on 3:30	4 on 1 off	4 0n 1 off	4 on 1 off	Reduce 1-4	4 on 1 off	3 on 1 off	2 on 1 off	1 on 1 off	3 x 1 on 2 off	2 x 1 on 2 off		
		Vcrit	2000	2400	2400	2400	2400	2400	2000	1600	2000	2400	2000	1600	1200	900	600		
	Test & Monitor				5 x 200				Race			5 x 200		30 days out	20 days out		10 days out		
	Performance																		
	Fatigue Level																		
	Camps etc.			**Sardinia/ Palma**					**Rome**	**Rome Camp**						**Travel to Osaka**	**Canada**	**Beijing**	**Beijing**

NBAC 2000

2000 -2001
SEASONAL PLAN FOR MICHAL PHELPS (NBAC)

DATES / CALENDER OF MEETS

MONTHS	MICROCYCLE	WEEK BEGINS	LOCATION
SEPT			
SEPT			
SEPT			
SEPT	1	25-Sep	
OCT	2	2-Oct	
OCT	3	9-Oct	
OCT	4	16-Oct	
OCT	5	23-Oct	
OCT	6	30-Oct	
NOV	7	6-Nov	
NOV	8	13-Nov	WORLD CUP
NOV	9	20-Nov	
NOV	10	27-Nov	
DEC	11	4-Dec	XMAS MEET
DEC	12	11-Dec	
DEC	13	18-Dec	
DEC	14	25-Dec	
DEC	15	1-Jan	
JAN	16	8-Jan	ATLANTA
JAN	17	15-Jan	
JAN	18	22-Jan	WORLD CUPS
JAN	19	29-Jan	
FEB	20	5-Feb	
FEB	21	12-Feb	
FEB	22	19-Feb	
FEB	23	26-Feb	
MAR	24	5-Mar	ALL STAR
MAR	25	12-Mar	
MAR	26	19-Mar	
MAR	27	26-Mar	W.C. TRIALS
APR	28	2-Apr	
APR	29	9-Apr	
APR	30	16-Apr	
APR	31	23-Apr	
APR	32	30-Apr	
MAY	33	7-May	
MAY	34	14-May	ANN ARBOR
MAY	35	21-May	
MAY	36	28-May	
JUN	37	4-Jun	
JUN	38	11-Jun	LOCAL SENIO
JUN	39	18-Jun	
JUN	40	25-Jun	SANTA CLAR
JUL	41	2-Jul	
JUL	42	9-Jul	
JUL	43	16-Jul	
JUL	44	23-Jul	WORLD CHAM
JUL	45	30-Jul	
AUG	46	6-Aug	
AUG	47	13-Aug	U.S. NATIONA
AUG	48	20-Aug	
AUG	49	27-Aug	
	50	3-Sep	

DOMESTIC / INTERNAT

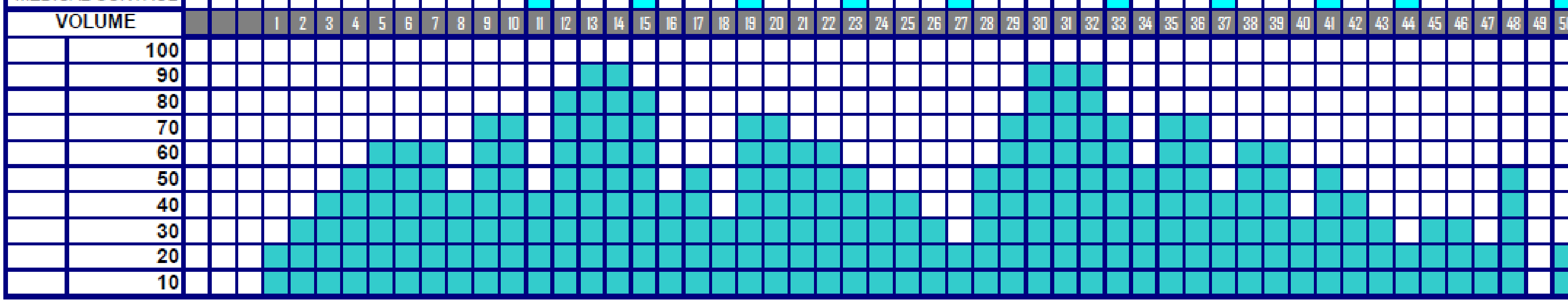
PERIODIZATION

TRAINING PHASE	TRANS PERIOD	BUIDING BASE	INTENSITY PHASE	COMP	SPECIFIC	COMP	INTENSITY	SPECIFIC	PEAKING	T	BREAK	
STRENGTH	REHAB	PROGRESSIVE	POWER	MAINT	PROG/POWER	MAINT	PROG	POWER	MAINTENANCE	M		
ENDURANCE	MAINT	GENERAL PROGRESSIVE	MIXED	MANT	SPECIFIC	MAINT	MIXED	SPECIFIC	MAINTENANCE	M		
SPEED	MAINT	MAINT	PROG	MAX	PROG	MAX	MAIN/P	PROGRESSIVE	MAX	M		

TESTING DATES

MEDICAL CONTROL

VOLUME



Age Group Week

Loughborough University

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
AM	IM	Kick & Pull	Off	Drills, Skills, Technique	Kick & Pull Equipment	IM & #1 Stroke	Off
PM	Freestyle	Fly & U/W Dolphin	IM	Breast	Backstroke & Breath Control	Off	Off

Key
Blue = Steady or Build
Purple = Fast Aerobic
Red = Fast Race Pace

Rotate the week
All Sessions
By day
Just the PM session

Example Training Week

Day	Stroke	Technique Focus	Aerobic Work	Additional Work
Mon	Freestyle	High elbow catches	300's (2400m main set)	
Tue	Butterfly	Short repeats, short rest (rainbow effort)	Mixed set alternating 50's and 25's with Free	Super walls 25's & 50's
Wed	IM	Transitions between strokes	200's alternating with rotating IM	Hard kick set (100's & 50's – 1600m)
Thu	Backstroke	Accelerate entry and emphasise rhythm	Pyramid 100-400-100 (3200m main set)	Super walls – turns & U/W
Fri	Breaststroke	Pull-kick acceleration; reduce 'dead spot'	Mixed drills into Desc. Br and fast 25's	Br pull to focus on arm speed
Sat	IM & Free		Pyramid 100-600-100 (3600m main set)	Kick set (weakest 2 strokes; 200's)

Age

Loughborough University

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
AM	30-40 BBM	30-40 BBM Hard Kick	Off	40-50 BBM	30-40 BBM	Quality/ Challenge	Off
PM	HR Max	40-50 BBM	VO2 max/ Race Pace	30-40 BBM Hard Kick	Off	Off	Off

Senior

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
AM	40-50 BBM Speed	40-50 BBM Hard Kick	Off	40-50 BBM Hard Kick	Desc to 30 BBM 3000m	Broken Swims R Pace	Off
PM	HR Max	40-50 BBM	Speed & La Prod	40-50 BBM	5k Tech & Recovery	Off	Off

Planning the week

Loughborough University

Age Group vs. Senior Swimming

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

Set Construction

Set	Physical	Technical	Mental	Tactical
Warm-up:		✓		
Prep set:	✓	✓		
Main set:	✓		✓	
Recovery/ Technique:		✓		
Contrast:			✓	✓

Set Construction

Main Set	Physical	Technical	Mental	Tactical
4 Rounds				
4 x 50 @ 200 RP + 6/4/2/0 s on 60	Effort desc from HR -40 to -10	Efficient stroke as pace increases	Concentrate on correct pace	Pace control
4 x 100 1 steady 3 @ HR max On 1:45	Recovery Max aerobic pace	Not sloppy Great last turn under pressure	Tough - best effort pace Refocus	Even split 50's
100 Easy on 2:00	Recovery			
2 x 25 1 Dive Max 1 steady On 45	Pure speed	Focus on entry and transition		Sharp off the blocks
2250m – 1275m @ Pace				

Education 1

- Technique
  - Set the skill with Drill
  - Transfer to full stroke
  - Breath control

- Fins
  - Use for body position
  - Don’t become over-reliant

- Underwater work
  - Number of kicks
  - Distance off the wall

Leg Kick Contribution

Simple analysis of 100m and 200m races:

≤ 30% of the race can be swum underwater

(2 x 15m in 100m, 4 x 15m in 200m events)

Importance for:

- Dolphin Kick – powerful and rapid
- To achieve a body position 'riding high' on the water
  - Reduce resistance and improve forward speed
  - Balance in the stroke
  - Provide a solid base to provide propulsion

Good practice and repetition in training are essential

Key Points

Improve your ankles

- Strengthen plantar flexion
- Flexible, but stable

- Determine the best UWD frequency for you
  - Tempo trainer [TT]
- Work on the upbeat (recovery phase)
  - Transition from down to up
- Identify the optimal time to begin the kick
- Co-ordinate hip and ankle movement [TT]

Swimming World – May 2017

Education 2 - Pacing

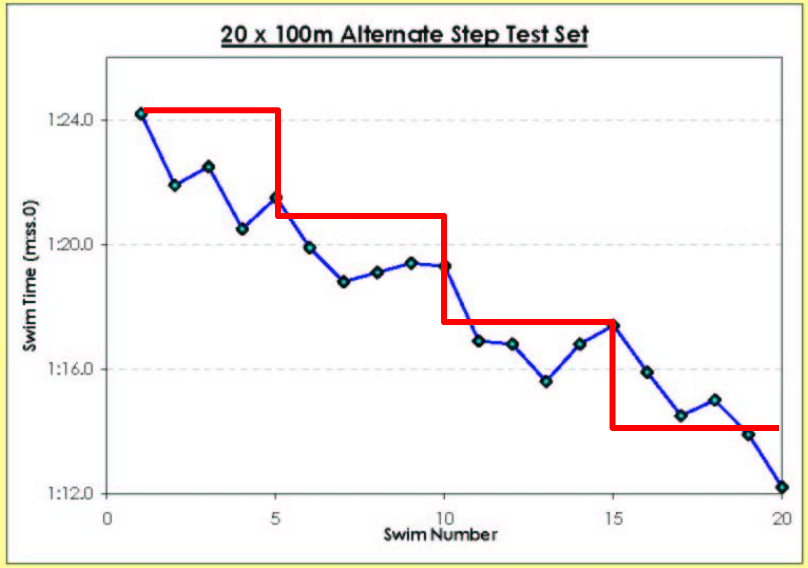
Loughborough University

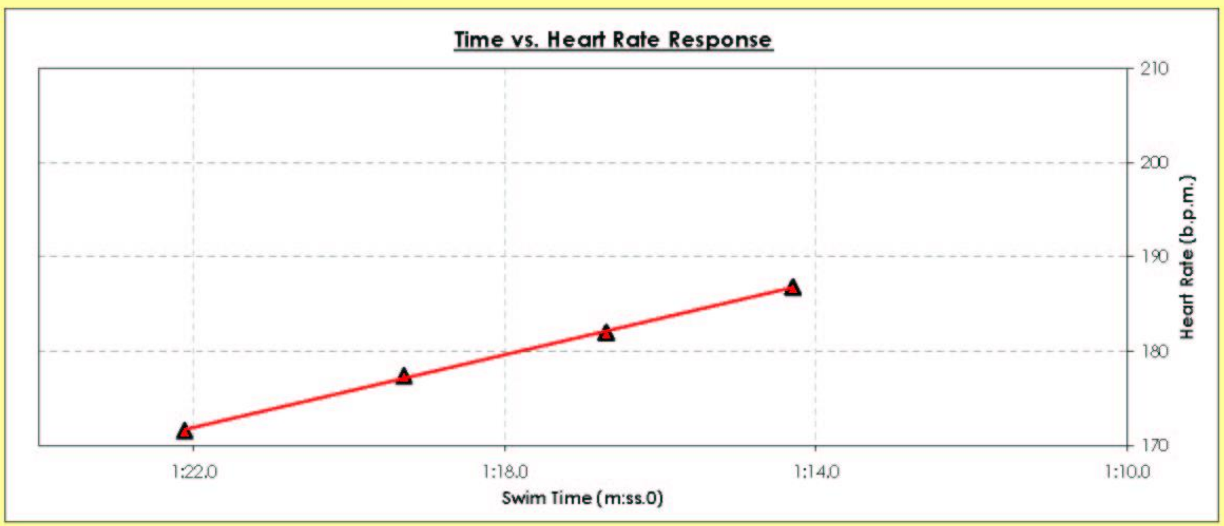
SWIMMER A

Date: 9th September 2006

Pool: 50m Indoor - Iceland

Maximum Heart Rate	200
$V_{CRITICAL}$	1:07.4
20BBM Pace	1:17.8
40BBM Pace	1:28.2
60BBM Pace	1:38.6





		TIME	H/RATE
1	60 - 70BBM	1:24.2	169
2	60 - 70BBM	1:21.9	173
3	60 - 70BBM	1:22.5	170
4	60 - 70BBM	1:20.5	173
5	60 - 70BBM	1:21.5	173
6	40 - 50BBM	1:19.9	176
7	40 - 50BBM	1:18.8	178
8	40 - 50BBM	1:19.1	177
9	40 - 50BBM	1:19.4	178
10	40 - 50BBM	1:19.3	178
11	20 - 30BBM	1:16.9	180
12	20 - 30BBM	1:16.8	182
13	20 - 30BBM	1:15.6	184
14	20 - 30BBM	1:16.8	182
15	20 - 30BBM	1:17.4	182
16	Best Effort	1:15.9	185
17	Best Effort	1:14.5	186
18	Best Effort	1:15.0	186
19	Best Effort	1:13.9	187
20	Best Effort	1:12.2	190

AVERAGE TIMES

60 - 70BBM	1:22.1	172
40 - 50BBM	1:19.3	177
20 - 30BBM	1:16.7	182
Best Effort	1:14.3	187

Common issues?

Loughborough University

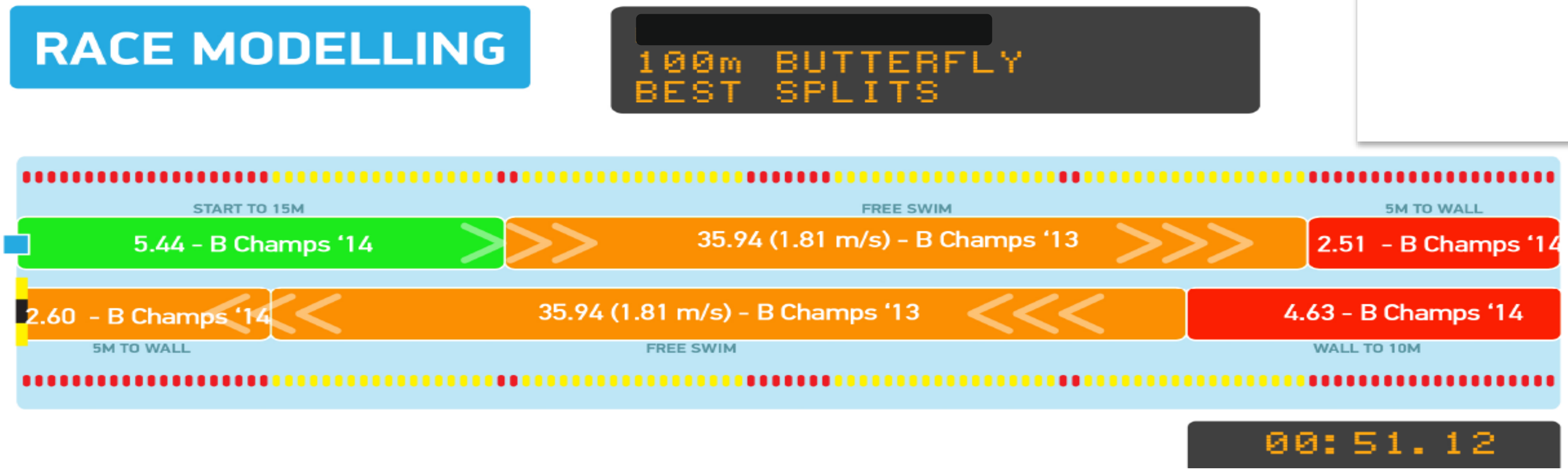
- A lot of swimmers started off too fast at the beginning of the set
- Many athletes need more practice at being able to 'hold' a pace for a set of repeats
- Most found it difficult to find 4 distinct 'gears'
- Better or worse at faster speeds – test it!
- Translate to race pace (e.g. 50's)

WELCOME TO DAY 1

Loughborough University

USA: Competence, Character, Confidence, Connection

Education 3



- From the top left, the swimmer dives in and the start time (to 15m) is in green
- The swimmer continues through the length (free swimming speed to 45m)
- Swimmer's turn time is taken from 5m into the wall to 10m off the wall – in red
- The point from 60m to 95m is free swimming speed again (orange)
- The finish segment is the final 5m to the wall

N.B. The free-swimming speed is the total time
- 15-45m and 60-95m

A simple Race Model

Loughborough University

- Set a realistic Target Time
  - Awareness of age/stage development
- Splits
  - Based on Best Practice (Maglischo, 2003)
- Stroke counts
  - Monitor race specific technique improvements
- Basic filming
  - Measure SR & SC values later
  - Estimate Turn times/distances

Coaching Character

How do Coaches Coach Now?

- Physical training; conditioning
- Technical/Skills
- Mental

Start with Character: Training these aspects becomes easier

Coaching Character

Loughborough University

How do we Achieve This?

- Instil correct behaviours from a young age
- Change the Culture within Clubs/Coaching
- Constantly aware of 'Character'
- Ongoing Process/Discussion
- Develop Systematically
- Currently Developing Models for National Team Coaching

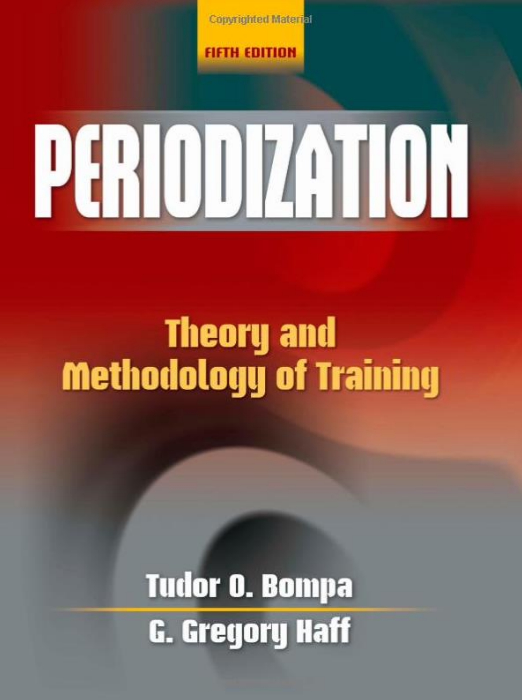
Example . . . .

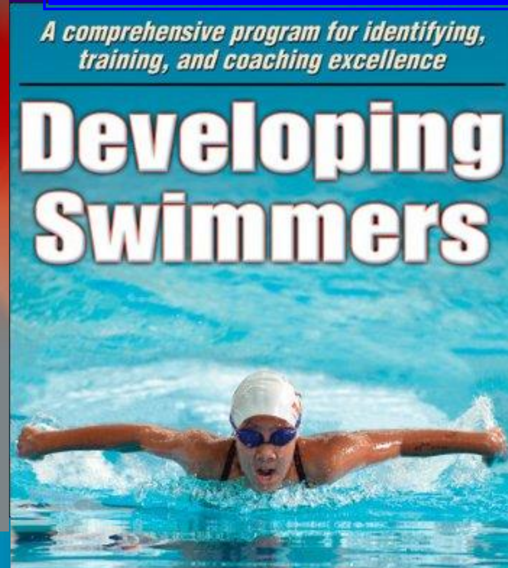
SUMMARY

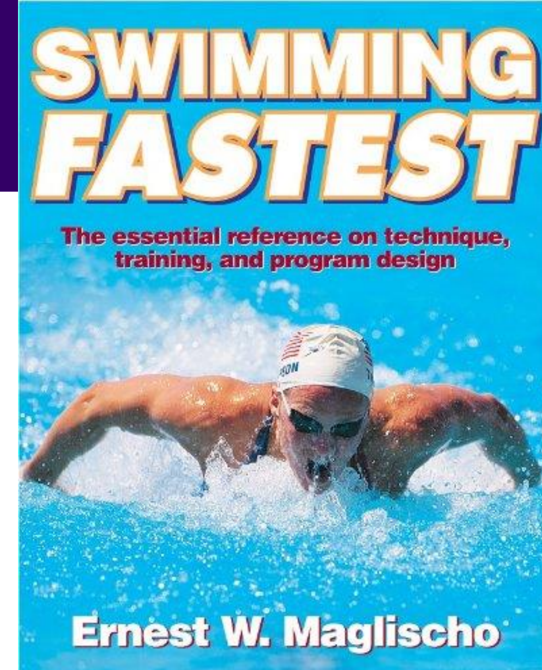
Loughborough University

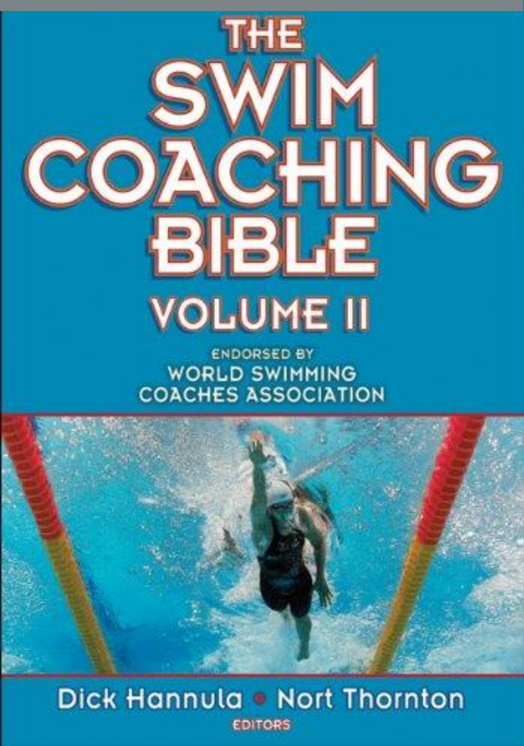
- The Swimmer's journey: Everyone's is unique
- Enjoy the process – the highs and the lows: Learning opportunities
- Commitment and attendance are critical –
  we can't help anyone who is not here!
- Educate throughout
- Improvement is not linear
- Swimming is a very complex sport
  Success takes a long time to achieve
- Attention to detail is crucial: deliberate practice

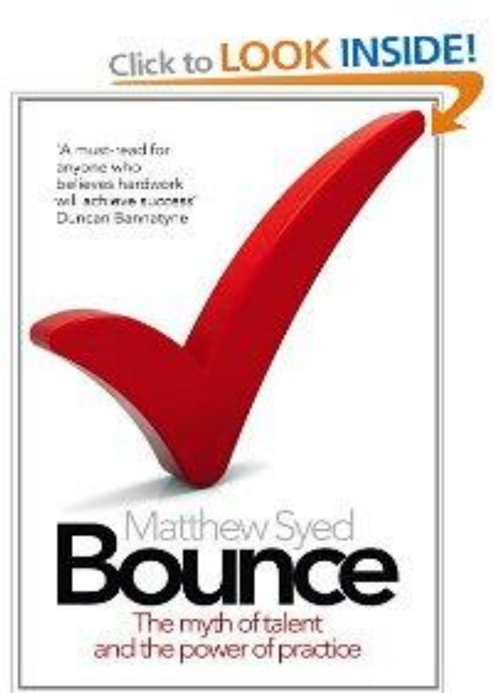
Further Reading

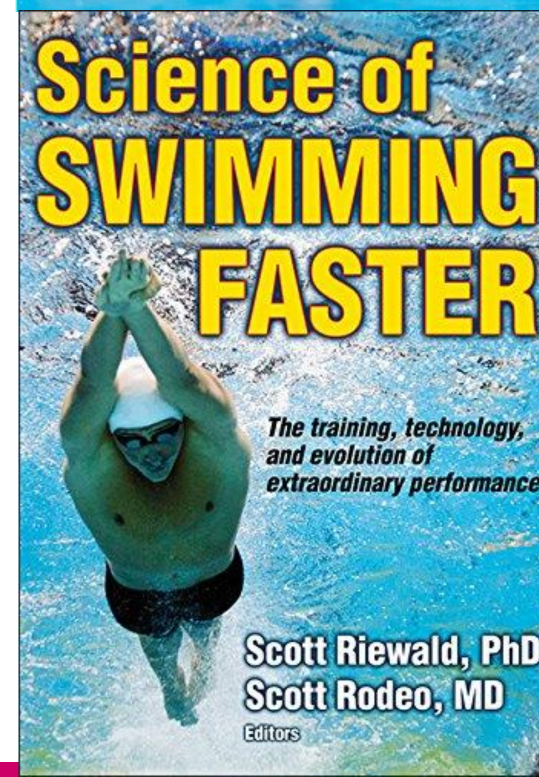













NONGFU SPRING
WWOS.COM.AU
1 PALT +0.1m
2 RASO +5.7m
3 SCHW +4.7m
4 de T
5 WIFF leader
6 JOHA +8.9m
7 ROMA +17.9m
8 WINN +3.3m
7:06.8
739m
Men's 800m Freestyle

THE JOSEPH SCHOOLING JOURNEY

Everyone is Different!

Thank you for your attention!

Dr Michael Peyrebrune
mikepeyrebrune1@gmail.com

Loughborough University

Inspiring Winners Since 1909