



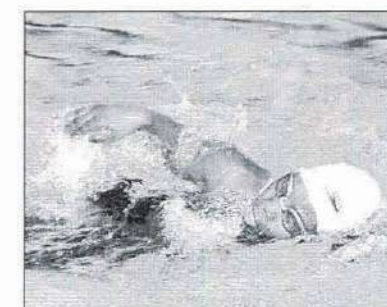
2004/05
Coaching manual

SCOTTISH
WIMMING



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**SCOTTISH
SWIMMING**

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Scottish Swimming would like to acknowledge the contribution made by Ian Wright in producing this resource.

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The Academy: A Scottish Swimming development programme

Training day content

The Academy programme has been devised by Scottish Swimming to develop the sport of swimming across the country. There are 12 different area squads throughout Scotland. The programme provides opportunities for talented young swimmers aged 10 to 12 years to develop skills and talents to ensure that they have every opportunity to succeed in swimming.

This year, the programme will operate under a similar format to previous years when it was known as Flying Start. There will be four educational training days, three in the swimmer's local area and one centralised day for all squads, long course in Stirling. In the pool, there will be a strong focus on technical and skill development, while training the physiological systems will also be incorporated. This will involve monitoring progress with some key basic test sets and an awareness of pace control during training sets. Land work and theory sections remain key aspects of the programme but their focus will shift into shorter but more concentrated blocks. At all times the emphasis will be on educating the young swimmers in the skills and principles needed to be successful in the sport of competitive swimming.

Admission procedure

Admission to the programme is by recommendation from individual clubs. To ensure parity across the programme, and within each squad, swimmers are asked to complete the tasks outlined below. They should be able to perform these tasks according to the set criteria.

Technique and skills:	<ul style="list-style-type: none"> Four competitive strokes, as defined by SASA laws; basic knowledge of the competitive skills of starts, turning and finishing
Continuous swimming:	Holding stroke pattern with even pace and relevant skills: <ul style="list-style-type: none"> 400m freestyle (with full aquatic breathing) 200m backstroke (with good timing and rhythm) 200m breaststroke (with a simultaneous whip action kick and a circular arm action that does not go past the shoulder line) 50m butterfly (with arms clearing the water, and a good understanding of the undulating nature of the stroke) 100m individual medley
Interval training:	Holding stroke pattern with relevant skills: <ul style="list-style-type: none"> 4 x 100m freestyle, with 20 seconds rest 4 x 50m backstroke, with 15 seconds rest 4 x 50m breaststroke, with 15 seconds rest 4 x 25m butterfly, with 20 seconds rest
Basic speed:	Fastest possible pace <ul style="list-style-type: none"> 4 x 25m as 12½m fast, 12½m steady on 2.00, holding technique and stroke quality
Sculling:	Showing good sculling technique <ul style="list-style-type: none"> Knowledge of 5 different sculling positions (e.g. head and feet first on front and back)



Training competencies:	<ul style="list-style-type: none"> Lane swimming discipline; order; direction; overtaking Use of pace clock for starting; resting; timing single swims Use of equipment; goggles; floats; flags Maintenance of technique; smooth and controlled stroke Awareness of effort; steady pace; acceleration; fast finish
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THEORY CONTENT

We want to produce swimmers who are thinking athletes, who learn to use their brains when they come to training and who are knowledgeable about all aspects of their sport. We also want them to leave the camps having had a worthwhile experience and having had a lot of FUN!

This is no mean feat! You will need to sell the swimmers on the great times that they can have in the sport of swimming, and educate them to appreciate the wider picture. Every opportunity should be taken to help them understand what they need to do to achieve success in swimming!

Even though previous theory sessions were limited to one hour in order to prevent swimmers losing concentration, this does not appear to have worked. Feedback has been almost unanimous that the theory sessions should be shorter and different. For the new Academy programme, theory sessions will last between 20-30 minutes. Although the head coach will lead these sessions they should by no means be considered lectures or presentations of material. Swimmer and coach involvement is critical and therefore they must involve lots of interaction and exercises for them to do.

The material needs to be relevant but delivered in clear, concise and easy to understand ways. The aim is to make sure it is not too easy for anyone but also that it challenges the swimmers to think. **You will therefore need to give a lot of thought on not only the content of the work, but also on your method of delivery.**

The use of different tones and pace in your voice can keep them focussed, as well as breaking things up into smaller sections. You may decide to make use of different media and methods, e.g. overheads, whiteboard, flip charts, group exercises, team exercises, video – to hold their attention.

Included in the programme will be the completion of daily log sheets and some homework exercises: make sure you stress the importance of completing these. It is worth checking beforehand if any of the swimmers in the group have any learning difficulties. Ensure that these swimmers are supported by a member of staff and assisted to complete any theory exercises.

The theory sessions will need to cover the following topics:

Programme orientation

- welcome; information on whole programme; expectations; standards
- why the programme exists; links to work in home club; changes from last year

Awareness of sport of swimming

- what is competitive swimming (continuum)?
- what are the critical factors that contribute to performance? How are these developed over the course of time?
- application to competition; role of competition; levels of competition; rewards (satisfaction, recognition, representation)
- training; learning the skills; progression; commitment

Self-awareness

- swimmer understanding of their position in the sport and how to progress to next and further levels
- assessment and understanding of personal strengths and weaknesses

- how to use psychological, physical and technical skills to produce better performance

Technical knowledge

- basic understanding of energy zones and heart rate
- extend understanding of stroke techniques and the implications of varying stroke length and stroke rate
- review of key training principles and their application
- review of principles of nutrition and hydration

Land training

- brief review of theory of land training; why we do it; the benefits in developing co-ordination, muscular endurance and power; types of land work

Testing

- awareness of the use of testing in swimming
- introduction to swim tests
- interpretation of results
- use of monitoring, and its role in motivation

PRACTICAL CONTENT

Some of the concepts and ideas that are discussed in the classroom are put into practice in the pool. Careful consideration should go into the planning of the roles of the head and assistant coaches, as well as the roles taken by the lane coaches.

Although some changes have been made to the content, this is still very much a skills based programme and at all times the emphasis should be on consolidating existing skills, introducing new ones and allowing learning through repetition. Coaches should be constantly evaluating the abilities of the swimmers and regularly giving them instruction, praise and technical feedback. If there is a particular weakness in a swimmer or a group of swimmers, then where possible, try to separate that swimmer (or swimmers) from the rest of the group for additional work on that specific area.

Seven key areas to develop

The Academy Programme will be divided into seven key areas 'of', and 'for' development. These seven key areas are broken down as follows:

1. **Stroke technique(s)**
 - enhancing efficiency of all four strokes
 - understanding stroke rate and stroke length
 - I.M. included as part of this section
2. **Speed swimming**
 - How to swim FAST over short distances!
 - Considerations of natural talent, power, size, stroke rate
3. **Endurance swimming**
 - It is not aerobic swimming but rather the ability to repeat the correct technical movements over a given time.
 - Use of continuous and repetition swimming (interval training)
4. **Kicking ability**
 - 3 types: flutter, dolphin and breaststroke
 - correct technique, repetition kicking, speed kicking, distance kicking
 - Use of fins
5. **Starts**
 - Assess – teach – demonstrate – practice – Reassess
 - Give marks out of 5
6. **Turns**
 - Two sections (1) push-off and transition; (2) approach and rotation
7. **Racing and relays**
 - All of the first six sections must relate to racing as how to race is what we are trying to teach them to do!
 - Racing elements incorporated throughout
 - Relays – formal and informal (kids find relays fun!)

At the end of two years we want swimmers to be able to:

- Technique** – have four efficient strokes.
- Speed** – be able to swim 4 x 25 maximum effort on each stroke with ± 0.25 consistency having improved time and with less strokes.
- Endurance** – swim an appropriately paced 1500 freestyle training test holding an efficient stroke and effective turns throughout.
- Kick** – be able to perform: 3 x 200 Brs kick ± 5 secs all under a set time (specific to the individual); 5 x 100 Fc & Back kick ± 5 secs with 20-30 seconds rest; 6 x 50 Fly kick holding pace (with or without a kickboard).
- Starts** – in line with the descriptors provided below.
- Turns** – in line with the descriptors provided below.
- Relays and racing** – have raced all events including relays (with exception of 800/1500 free and 400 IM).

Training application

- The application by the swimmer to train correctly should be incorporated into the above seven key areas. For example, pre-swim preparation, use of the clock, use of heart rate, lane discipline, lane discipline, control of effort.

Testing

- Introduction to swim testing procedures
 - Kick tests
 - Endurance test (400m swim)
 - Speed test
- Maintenance of good stroke mechanics while testing
- Recording, interpreting and using results

PROGRAMME CONTENT PLANNING

SEPTEMBER: Session 1 <ul style="list-style-type: none"> Fc technique Brs kick Back endurance (interval) Fc and Bk push-offs and transition Fc speed Fly technique (fins) 	SEPTEMBER: Session 2 <ul style="list-style-type: none"> Brs technique Back kick Fc speed test Fc and Bk approach and rotation Fc endurance (400 pacing)
OCTOBER: Session 1 <ul style="list-style-type: none"> Back technique Fly kick Fc endurance (interval) Back speed Brs and Fly push-offs and transition 	OCTOBER: Session 2 <ul style="list-style-type: none"> Fc endurance (400 pacing) Fly technique Fc kicking Back speed test Brs and Fly approach and rotation
NOVEMBER: Session 1 <ul style="list-style-type: none"> Brs endurance (interval) Fly speed Technique (all 4 strokes and IM) Review all kicking 	NOVEMBER: Session 2 <ul style="list-style-type: none"> Fc endurance test (400) Fly speed test IM technique and endurance Starts

LAND CONTENT

Like the theory work, land sessions will be kept brief and to the point. Lasting between 20-30 minutes they will focus on introducing a range of simple but effective exercises and how these can be structured into a basic circuit.

In addition to the formal land sessions, instruction on how to perform effective pre and post-swim routines will form part an essential part of the land work content.

FORMAT OF EACH EDUCATION DAY

The timetable for each day will be along the following lines:

- 1 Staff arrive - briefing and allocation of duties
- 2 Swimmers arrive - Welcome and introduction
- 3 Theory 1
- 4 Pool session 1 (LUNCH)
- 5 Theory 2
- 6 Land training
- 7 Pool session 2
- 8 Swimmers debrief & depart
- 9 Staff debrief & depart

The exact format of the day is subject to the availability of facilities locally, but each day will include two 90 minute pool sessions, two theory sessions and one land training session.

PROGRAMME STANDARDS

We need to develop a tradition of excellence in our young swimmers. As children learn by repetition, we have to ensure that we are continually asking the swimmers to complete the technical skills of swimming to the highest possible level. This should include all warm ups, steady swims, recovery swims and swim downs – it is not possible to develop technique on a part time basis!

Have in your mind at all times a perfect picture of how the stroke should be swum, the drill completed, the set swum. How can these swimmers reach this ideal? What can you do to help them improve?

The following points should be emphasised in every workout to develop this tradition of excellence:

- *Streamline* every start, turn and push off
- A strong kick action should be developed in all strokes - all kicking practices to be performed as quality, with no talking allowed
- Drills should be carried out to the highest possible standard. Sloppiness must not be tolerated
- Breathing every 2 strokes on Butterfly should be encouraged to maintain good body position
- Bilateral breathing should be developed on Freestyle to encourage symmetry in the stroke
- Breath holding should be developed when performing short bursts of speed over 10m to 15m
- Swimmers should be able to turn on either arm in Backstroke and Freestyle
- Always use an underwater pull and kick in Breaststroke out of all starts and turns – establish target distances to be achieved off every turn
- On Butterfly, Backstroke and Freestyle establish and develop underwater kicks – again establish target distances or number of kicks to be performed
- Ask swimmers to hold their breath into the finish on Butterfly and Freestyle (e.g. from the flags into the wall or last 3 strokes)
- Swimmers should accelerate into every turn, and not anticipate them.

If this programme is to have real benefit, then this message should be brought home at all times.

If swimmers want to improve their technique to become better swimmers then they have to make a conscious decision never to swim the way they swam before again. NOT EVER. They must make the change and do it that way every time to the best of their ability.

We, as coaches, need to design our practices to help them stay focused on this concept.

The Academy: A Scottish Swimming development programme

Programme content: Training Day 1

WELCOME & INTRODUCTION (10 mins)

- Introductions - introduce all staff, lane coaches, giving a brief background.
- Brief overview of the purpose and structure of The Academy programme.
- Outline of today's timetable and contents.
- Expectations of the swimmers - rules, timekeeping, personal equipment, conduct attention and application.
- What to do if any problems arise.
- Issue Day 1 Log Sheets.

THEORY SESSION 1 (20 mins)

Awareness of the sport of swimming

- Led by the Head Coach on the sport of swimming – discuss structure, role of competition, commitment required, rewards available.
- Demonstrate the competitive swimming continuum from pre-club to international.
- Talk briefly about the skills required to be a successful swimmer - technique, flexibility, strength, speed, mental abilities.
- Through interactive exercises (get the swimmers to talk to you / other coaches / other swimmers!) ensure each swimmer understands their current position in the sport and can appreciate possible ways to get to the next level.

Briefing for pool session 1

- Inform swimmers of lane allocation (planned in advance although you may change it during the session).
- Run through main features of the session (refer to session content).
- Outline expectations and objectives for the session.

THEORY SESSION 2 (20 mins)

Review key points from pool session 1

- 3 or 4 main points of strengths and weaknesses – give praise and feedback.

Discussion on land training

- Give a brief overview of land training: why we do it; the benefits in developing co-ordination, muscular endurance and power; and types of land work undertaken by swimmers.
- Review the concepts of stretching and flexibility – their differences and their importance to swimmers.
- Introduce the concept of games and their role in swimming land work.
- Draw the links from various elements of land training to relevance for swimming (e.g. how flexibility / strength gains on land are used in the water).

Briefing for pool session 2

- Run through the main features of the session (refer to session content).
- Outline expectations for the session.

POOL SESSION 1

Objectives:	What coach looks for:
• Conduct general assessment of group performance.	• Range of standards, stroke skills, lane discipline.
• Review training competencies (lane organisation; use of clock; ability to apply instructions).	• Enthusiastic swimmers who are willing and ready to learn.
• Develop frontcrawl technique.	• Strong kick, early catch, relaxed breathing.
• Introduce butterfly technique.	• Correct timing of pull and kick.
• Aerobic development through backstroke interval work.	• Ability to hold technique and pace.
• Improve breaststroke kicking ability.	• Toes turned out early, good distance per stroke.
• Teach push-off and transitions as part of frontcrawl and backstroke turning practices.	• Perfect streamlining, fast underwater kicking.

Sets / reps / practices:	Coaching points:
Land based warm-up (5mins) <ul style="list-style-type: none"> Commence this 10 mins prior to pool start time. Led by assistant coach. Simple dynamic mobility and blood flow exercises (e.g. arm swinging, skipping, jumps, jogging on spot – NOTE: not stretching work). 	<ul style="list-style-type: none"> Control of body and limb movements. Head coach to brief lane coaches about their role in the pool session whilst this takes place.
Swimming warm-up (10 mins) <ul style="list-style-type: none"> 200 Fc, 100 Bk, 100 Brs, 50 Fly, 100 I.M. 	<ul style="list-style-type: none"> Quickly assess group on all strokes and turns – relate to nomination criteria, change lanes if necessary.
Develop Fc technique and speed (20 mins) <ul style="list-style-type: none"> Series of 25s and 50s developing technique. Break into basic kicking, pulling and breathing skills. Conclude with 4 x 25 alternating half length sprints and build to max 25s. 	<ul style="list-style-type: none"> Control of entry, path of pull, timing of breathing, continuity of kick, clean smooth movements.
Improve Brs kick (20 mins) <ul style="list-style-type: none"> 4 x 25 teach main points. 4 x 50 DPK – aim to reduce kick count per 50. 2 x 100 2nd 100 faster than 1st but with less kicks. 1 x 200 time and kick count. 	<ul style="list-style-type: none"> Heels to seat, turn toes out, drive feet back, squeeze heels together. Spend money per Brs kick (start with £1 per 25m, 10p per kick, can you save or spend?).
Turns: Fc & Bk push-offs and transitions (12 mins) <ul style="list-style-type: none"> Series of half length push-offs with transition to stroke starting from wall. Start slow and develop to maximum effort. Utilise underwater dolphin kick, decide on optimum number of kicks (swimmer individual). 	<ul style="list-style-type: none"> Streamlining, powerful drive with legs, fast underwater kick, gradual ascent to surface, maintain kick during first two arm pulls.
Endurance development (on back) (15 mins) <ul style="list-style-type: none"> 8-10 x 50 back swim on short rest interval (approx 10-15 secs). Maintain speed and stroke count throughout. Emphasise improved push-offs from set above. 	<ul style="list-style-type: none"> Swimmer to check time and stroke count (2nd 25), coach to interact to correct faults and encourage maintaining form.
Introduce Fly (10 mins) <ul style="list-style-type: none"> 10 x 25 alt kick – swim. Use fins for first 8 and remove for last 2. 	<ul style="list-style-type: none"> Even 2 beat kick, relaxed recovery, undulating body movement, pull under body.
Recovery (2 mins) <ul style="list-style-type: none"> 2-4 lengths on choice of stroke at slow speed. 	<ul style="list-style-type: none"> Slow and smooth, maintain quality technique and turns.

POOL SESSION 2

Objectives:	What coach looks for:
• Review standards and attitude of group.	• Swimmers who maintain concentration.
• Develop breaststroke technique.	• Correct timing of pull and kick.
• Conduct speed test on frontcrawl.	• Fast movements with technical control.
• Endurance development through frontcrawl pace work.	• Control of technique, ability to hold and change pace.
• Improve backstroke kicking ability.	• Horizontal body, toes to surface.
• Teach approaches and rotations as part of frontcrawl and backstroke turning practices.	• Feet placed on wall quickly.

Sets / reps / practices:	Coaching points:
Land based warm-up (5mins) <ul style="list-style-type: none"> Commence this 10 mins prior to pool start time. Led by assistant coach. As per session 1 but use different range of exercises. 	<ul style="list-style-type: none"> Control of body and limb movements. Head coach to brief lane coaches about their role in the pool session whilst this takes place.
Swimming warm-up (7 mins) <ul style="list-style-type: none"> 400 as 50 Fc 50 reverse IM order. 	<ul style="list-style-type: none"> Review standards, check control of effort.
Develop Brs technique (20 mins) <ul style="list-style-type: none"> Series of 25s and 50s developing technique. Break into basic kicking, pulling and breathing skills. 	<ul style="list-style-type: none"> TIMING! – pull / breathe / kick / glide, heels together before hands separate, must get to lie out position.
Improve Back kick (15 mins) <ul style="list-style-type: none"> 4 x 25 teach main points. 8 x 50 (2) hold (4) negative (2) faster (on 1:30 / 1:45). 	<ul style="list-style-type: none"> Horizontal body position, keep stomach high, knees down, toes up, flexible ankles, work up and down.
Conduct Fc speed test (10 mins) <ul style="list-style-type: none"> 4 x 25 Fc maximum effort (from push) on 2:00. Record times and stroke counts. 	<ul style="list-style-type: none"> Fast movements, streamlined push, powerful kick, finish hard, all with technical control.
Turns: Fc and Bk approaches and rotations (12 mins) <ul style="list-style-type: none"> Series of half lengths starting from middle of pool. Approach wall at speed and build to fast rotation. Conclude with couple of full turns: in and out. 	<ul style="list-style-type: none"> Tight tuck, plant feet on wall fast and hard, no breathing in last 3 strokes (Fc).
Fc endurance development (400 pacing) (15 mins) <ul style="list-style-type: none"> 6 x 50 Fc (3) hold (2) build (1) faster (15 secs). Broken 400 swim: 50 / 100 / 100 / 100 / 50 (20-30 secs). Control 20-50m, hold middle 100's, build to fast finish. Emphasise improved turns from set above. 	<ul style="list-style-type: none"> Control of effort, efficient technique, maintain stroke count, attack each turn.
Fun activity (10 mins) <ul style="list-style-type: none"> Educational swimming game. 	<ul style="list-style-type: none"> Your choice of game.

LAND SESSION (20-30 mins)

Objectives:	What coach looks for:
<ul style="list-style-type: none"> Teach correct technique for a range of circuit type exercises and some key stretches. 	<ul style="list-style-type: none"> Swimmers who concentrate and have good body control.

Practices:	Coaching points:
General warm-up (5mins) <ul style="list-style-type: none"> Lead 5 minutes of general warm-up exercises that will loosen muscles, increase blood flow and raise heart rate (e.g. jogging, star jumps, arm swinging). 	<ul style="list-style-type: none"> Consider group organisation in space available and any other safety issues.
Teach a range of circuit exercises (15-20 mins) <ul style="list-style-type: none"> Select 6-8 simple and moderate circuit exercises, teach these exercises to the group and ensure the swimmers can perform them with control and correct technique. 	<ul style="list-style-type: none"> Core body stability, whole body strength, controlled smooth movements, importance of correct technique.
Teach cool down stretches (5 mins) <ul style="list-style-type: none"> Select 5-6 key upper and lower body muscular stretches that can be used as cool downs following land training, teach these exercises and ensure the swimmers can perform them with control and correct technique. 	<ul style="list-style-type: none"> Concentration on each stretch, importance of correct technique, injury prevention.

DEBRIEF (10 mins)

Review key points from pool session 2

- 3 or 4 main points of strengths and weaknesses – give praise and feedback.
- Lessons learnt.

Review of first day's activities

- What has been learnt.
- Important points to remember.

Explain exercises to be undertaken as homework prior to day 2.

Outline of Day 2

- Confirm date, time and place with swimmers.
- Outline activities to be covered in second day.
- Remind swimmers to continue to work on skills developed in Day 1 when they return to their home clubs.

Conclude with a motivating message

Academy log sheet: Day 1

Use this log sheet to record details of the training you conducted today. When you return to your home club show it to your coach so that they know what you did.

Name: _____

Session 1 details		Session 2 details	
Date:	Pool:	Date:	Pool:
Warm-up		Warm-up	
FC technique		Brs technique	
Brs kick		Fc speed test	
Fc and Bk turns		Fc and Bk turns	
Bk endurance		Fc endurance	
Fly		Alternative activity	

Fc speed test results			Brs technique work Points to work on:		Fc turns work Points to work on:		Bk kick set results	
25m	Time	SC					Factor	✓ or X
1							Body position	
2							Legs	
3							Feet/toes	
4							Depth	
Av.							Rhythm	
Fc 400 pace set results			Brs technique work Points to work on:		Bk turns work Points to work on:		Bk endurance set results	
#	Pace	✓ or X					Factor	✓ or X
50	Control						Technique	
100	Hold						Turns	
100	Hold						Pace	
100	Hold						Stroke count	
50	Build							
Use this space to add any further notes about today's training			Ask your lane coach to add their comments here					



The Academy: A Scottish Swimming development programme

Programme content: Training Day 2

WELCOME & INTRODUCTION (10 mins)

- Welcome all swimmers.
- Give outline of today's timetable and content.
- Remind them of expectations, rules, timekeeping, personal equipment, conduct, attention and application.
- Review Day 1 activities and discuss homework exercises.
- Issue Day 2 Log Sheets.

THEORY SESSION 1 (20 mins)

Review nutrition and hydration

- Outline what a healthy diet comprises, and how this relates to swimming training.
- Discuss the practical issues – what to eat (the healthy options); when to eat; how much to eat; when to drink; what to drink; how to check if you are hydrated.
- Conduct interactive exercise with swimmers on types of food suitable for the day of competition – pre-competition meal/snack; food to eat on poolside.

Briefing for pool session 1

- Run through main features of the session (refer to session content).
- Outline expectations and objectives for the session.

THEORY SESSION 2 (20 mins)

Review key points from pool session 1

- 3 or 4 main points of strengths and weaknesses – give praise and feedback.

Develop psychological skills

- How to cope with nerves/anxiety: why we get anxious; what it means; how it affects us; methods of controlling nerves.
- Goal setting: why set goals, what type of goals can be set (long, medium, short term; process, outcome), how to set goals (realistic, measurable, specific, achievable, time framed etc).

Briefing for pool session 2

- Run through the main features of the session (refer to session content).
- Outline expectations for the session.



POOL SESSION 1

Objectives:	What coach looks for:
• Review group standards and training competencies.	• Range of standards, stroke skills, lane discipline, enthusiastic swimmers.
• Develop backstroke technique and speed.	• Horizontal body position, fluent action.
• Aerobic development through frontcrawl interval work.	• Ability to hold technique and pace.
• Improve butterfly kicking ability.	• Even kick, undulating from hips, flexible feet.
• Teach push-off and transitions as part of breaststroke and butterfly turning practices.	• Perfect streamlining, fast underwater kicking.

Sets / reps / practices:	Coaching points:
Land based warm-up (5mins) <ul style="list-style-type: none"> • Commence this 10 mins prior to pool start time. • Led by assistant coach. • Simple dynamic mobility and blood flow exercises (e.g. arm swinging, skipping, jumps, jogging on spot – NOTE: not stretching work). 	<ul style="list-style-type: none"> • Control of body and limb movements. • Head coach to brief lane coaches about their role in the pool session whilst this takes place.
Swimming warm-up (7 mins) <ul style="list-style-type: none"> • 200 Fc, 100 Bk, 100 Brs, 50 Fly, 100 I.M. 	<ul style="list-style-type: none"> • Review group standards, look for differences to day 1.
Develop Bk technique and speed (25 mins) <ul style="list-style-type: none"> • Series of 25's and 50's developing technique. • Break into basic kicking, pulling and breathing skills. • Conclude with 4/6 x 25 mixture of 15/20/25m sprints. 	<ul style="list-style-type: none"> • Arm recovery – look down the rifle barrel, arm entry – karate chop, arm pull – think arm wrestle, continuity of kick, clean smooth movements.
Improve Fly kick (20 mins) <ul style="list-style-type: none"> • 12 x 25 teach main points, use fins, dolphin kick on front and back. • 6 x 50 vary pace, build, negative, fast underwater push-offs. 	<ul style="list-style-type: none"> • Undulating action from hips, maintain horizontal position, kick at surface, even depth kicks, flexible ankles, point toes.
Turns: Brs & Fly push-offs and transitions (15 mins) <ul style="list-style-type: none"> • Series of half length push-offs with transition to stroke starting from wall. • Start slow and develop to maximum effort. • Utilise underwater pull out / dolphin kick, decide on optimum distance / number of kicks (swimmer individual). 	<ul style="list-style-type: none"> • Streamlining, powerful arm pull through tube, drive with legs, fast underwater kick, gradual ascent to surface, maintain kick during first two arm pulls.
Endurance development (on Fc) (18 mins) <ul style="list-style-type: none"> • 8-10 x 75 Fc swim on short rest interval (on 1:30 / 1:45). • Maintain speed and stroke count throughout. • Emphasise attacking turns and strong push-offs. 	<ul style="list-style-type: none"> • Swimmer to check time and stroke count (middle 25), coach to interact to correct faults and encourage maintaining form.
Recovery (2 mins) <ul style="list-style-type: none"> • 2-4 lengths on choice of stroke at slow speed. 	<ul style="list-style-type: none"> • Slow and smooth, maintain quality technique and turns.

POOL SESSION 2

Objectives:	What coach looks for:
• Review standards and attitude of group.	• Swimmers who maintain concentration.
• Develop butterfly technique.	• Correct timing of pull and kick.
• Speed test on backstroke.	• Fast movements.
• Endurance development through frontcrawl pace work.	• Control of technique, ability to hold and change pace.
• Improve frontcrawl kicking ability.	• Horizontal body, toes to surface.
• Teach approaches and rotations as part of breaststroke and butterfly turning practices.	• Feet placed on wall quickly.

Sets / reps / practices:	Coaching points:
Land based warm-up (5mins) <ul style="list-style-type: none"> Commence this 10 mins prior to pool start time. Led by assistant coach. As per session 1 but use different range of exercises. 	<ul style="list-style-type: none"> Control of body and limb movements. Head coach to brief lane coaches about their role in the pool session whilst this takes place.
Swimming warm-up (7 mins) <ul style="list-style-type: none"> Swim 500m changing stroke every 25m. 	<ul style="list-style-type: none"> Review standards, check control of effort.
Develop Fly technique (20 mins) <ul style="list-style-type: none"> Series of 25s developing technique. Break into basic kicking, pulling and breathing skills. 	<ul style="list-style-type: none"> TIMING! – kick / pull / kick / recover, timing of breathing, path of pull, karate chop out.
Improve Fc kick (15 mins) <ul style="list-style-type: none"> 4 x 25 teach main points. 8 x 50 (2) hold (4) negative (2) faster (on 1:30 / 1:45). 	<ul style="list-style-type: none"> Horizontal body position, keep hips high, work from hips, flexible ankles, work up and down.
Conduct Bk speed test (10 mins) <ul style="list-style-type: none"> 4 x 25 Bk maximum effort (from push) on 2:00. Record times and stroke counts. 	<ul style="list-style-type: none"> Fast movements, streamlined push, powerful kick, finish hard.
Turns: Brs and Fly approaches and rotations (15 mins) <ul style="list-style-type: none"> Series of half lengths starting from middle of pool. Approach wall at speed and build to fast rotation. Conclude with couple of full turns: in and out. 	<ul style="list-style-type: none"> Tight tuck, knees to chest, plant feet on wall fast and hard, take 1 hand off straight away.
Fc endurance development (400 pacing) (12 mins) <ul style="list-style-type: none"> 6 x 50 Fc (3) hold (2) build (1) faster (15 secs). Broken 400 swim: 50 / 300 / 50 (20-30 secs). Control first 50, build middle 300, finish stronger. Relate to progress from similar set on day 1. 	<ul style="list-style-type: none"> Control of effort, efficient technique, maintain stroke count, attack each turn.
Fun activity (10 mins) <ul style="list-style-type: none"> Educational swimming game. 	<ul style="list-style-type: none"> Your choice of game.

LAND SESSION (20-30 mins)

Objectives:	What coach looks for:
• Develop a circuit training session using exercises practiced in day 1.	• Swimmers who concentrate and have good body control.

Practices:	Coaching points:
General warm-up (5mins) <ul style="list-style-type: none"> Lead 5 minutes of general warm-up exercises that will loosen muscles, increase blood flow and raise heart rate (e.g. jogging, star jumps, arm swinging). 	<ul style="list-style-type: none"> Consider group organisation in space available and any other safety issues.
Develop a circuit training session (15-20 mins) <ul style="list-style-type: none"> Using the exercises practiced in day 1, develop these into a circuit training session. Perform each exercise for a set period of time (e.g. 30 secs work 15 secs rest) and repeat whole circuit 2-3 times. 	<ul style="list-style-type: none"> Core body stability, whole body strength, controlled smooth movements, importance of correct technique.
Perform cool down stretches (5 mins) <ul style="list-style-type: none"> Select 5-6 key upper and lower body muscular stretches that can be used as cool downs following land training, ensure the swimmers can perform these with control and correct technique. 	<ul style="list-style-type: none"> Concentration on each stretch, importance of correct technique, injury prevention.

DEBRIEF (10 mins)

Review key points from pool session 2

- 3 or 4 main points of strengths and weaknesses – give praise and feedback.
- Lessons learnt.

Review of second day's activities

- What has been learnt.
- Important points to remember.

Explain exercises to be undertaken as homework prior to day 3

Outline of Day 3

- Confirm date, time and place with swimmers.
- Outline activities to be covered in third day.
- Remind swimmers to continue to work on skills developed in Days 1 & 2 when they return to their home clubs.

Conclude with a motivating message.



Academy log sheet: Day 2

Use this log sheet to record details of the training you conducted today. When you return to your home club show it to your coach so that they know what you did.

Name: _____

Session 1 details		Session 2 details	
Date:	Pool:	Date:	Pool:
Warm-up		Warm-up	
Fc technique		Brs technique	
Brs kick		Fc speed test	
Fc and Bk turns		Fc and Bk turns	
Bk endurance		Fc endurance	
Fly		Alternative activity	

Bk speed test results		
25m	Time	SC
1		
2		
3		
4		
Av.		

Fc 400 pace set results		
#	Pace	✓ or X
50	Control	
300	Hold	
50	Build	

Bk technique work
Points to work on:

Brs turns work
Points to work on:

Fc kick set results

Factor	✓ or X
Body position	
Legs	
Feet/toes	
Depth	
Rhythm	
Pace	

Fly technique work
Points to work on:

Fly turns work
Points to work on:

Fc endurance set results		
75m	Time	SC
9		
10		
Av.		

Use this space to add any further notes about today's training

Ask your lane coach to add their comments here



The Academy: A Scottish Swimming development programme

Programme content: Training Day 3

WELCOME & INTRODUCTION (10 mins)

- Welcome all swimmers.
- Outline of today's timetable and content.
- Remind them of expectations – rules, timekeeping, personal equipment, conduct, attention and application.
- Review Day 1 & 2 activities and discuss homework exercises.
- Issue Day 3 Log Sheets.

THEORY SESSION 1 (20 mins)

Introduction to testing

- Awareness of testing in swimming: why we test; what is tested and how.
- Introduction to swim tests in this programme.
 - Kick endurance test (8 x 50).
 - Swim endurance test (400 Fc).
 - Speed test (4 x 25).
- Explain how to interpret the results.
- Outline the use of tests to monitor training effectiveness and their role in motivation.

Briefing for pool session

- Run through main features of the session (refer to session content).
- Outline expectations and objectives for the session.

THEORY SESSION 2 (20 mins)

Review key points from pool session 1

- 3 or 4 main points of strengths and weaknesses – give praise and feedback.

Discuss competition and race strategies

- Give a brief overview of the different type of strategies and tactics that can be used during races.
- Discuss aspects of race preparation for dealing with different circumstances (heats, semi-finals, finals etc.).
- Have swimmers make a list of things which can go wrong at a competition and provide a coping strategy for each of them.

Briefing for pool session 2

- Run through the main features of the session (refer to session content).
- Outline expectations for the session.

POOL SESSION 1

Objectives:	What coach looks for:
• Review group standards and performance.	• Range of standards, stroke skills, lane discipline.
• Review all techniques and I.M.	• Body position, kick, pull, breathing, timing, maintenance of form during I.M. work.
• Develop speed on butterfly.	• Fast rhythmical stroke with strong 2 beat kick.
• Aerobic development through breaststroke interval work.	• Ability to hold technique and pace.
• Review kicking on all four strokes.	• Distance per kick.
• Review frontcrawl and backstroke full turns.	• Perfect streamlining, fast underwater kicking.

Sets / reps / practices:	Coaching points:
Land based warm-up (5mins) <ul style="list-style-type: none"> Commence this 10 mins prior to pool start time. Led by assistant coach. Simple dynamic mobility and blood flow exercises. (e.g. arm swinging, skipping, jumps, jogging on spot – NOTE: not stretching work). 	<ul style="list-style-type: none"> Control of body and limb movements. Head coach to brief lane coaches about their role in the pool session whilst this takes place.
Swimming warm-up (5 mins) <ul style="list-style-type: none"> 300 as 50 Fc 50 choice (not Fc). 	<ul style="list-style-type: none"> Reassess group, emphasise attention to technique and turns.
Review technique and all 4 strokes plus I.M. (25 mins) <ul style="list-style-type: none"> Series of 25s on each stroke concentrating on technique points. Check kicking, pulling and breathing skills. Develop into series of 50s I.M. switches (Fly-Bk, Bk-Brs, Brs-Fc). Conclude with 3 x 100 I.M. counting and reducing strokes. 	<ul style="list-style-type: none"> Body positions, control of entry, path of pull, timing of breathing, continuity of kick, clean smooth movements, maintain form through IM swims.
Review kicking on all strokes (20 mins) <ul style="list-style-type: none"> 6 x 25 Fly kick build power within each length. 4 x 50 Bk kick negative split. 4 x 50 Fc kick descend 1 to 4. 1 x 200 Brs kick DPK count for minimum number. 	<ul style="list-style-type: none"> Check all kicking points from previous days, emphasise DPK, powerful deep kicks.
Improve Fly speed (10 mins) <ul style="list-style-type: none"> 6 x 25 Fly alt build / sprint on 1:30. (4) with fins (2) without. Utilise fast underwater dolphin kick at start of each length. 	<ul style="list-style-type: none"> Streamlining, powerful drive with legs, fast underwater kick, fast rhythmical strokes, maintain 2 beat kick per pull.
Endurance development (on Brs) (15 mins) <ul style="list-style-type: none"> 5 x 100 Brs swim on short rest interval (20-30 secs). Hold pull out, stroke count, technique and effort throughout. Maintain speed. 	<ul style="list-style-type: none"> Swimmer to check time and stroke count, coach to interact to correct faults and encourage maintaining form.
Review Fc and Bk turns (10 mins) <ul style="list-style-type: none"> Series of 25s in and out of wall starting from middle of pool Apply into a full 100 swim with fast attacking turns Aim for rotation time under 1 sec (from last hand entry to feet on wall) 	<ul style="list-style-type: none"> Fast approach, no breath in last 3 strokes, time rotations, streamlining and kicking underwater.
Recovery (2 mins) <ul style="list-style-type: none"> 2-4 lengths on choice of stroke at slow speed 	<ul style="list-style-type: none"> Slow and smooth, maintain quality technique and turns.

POOL SESSION 2

Objectives:	What coach looks for:
• Review standards and attitude of group.	• Swimmers who maintain concentration.
• Conduct frontcrawl endurance test.	• Even or negative split pace.
• Conduct speed test on butterfly.	• Fast movements with technical control.
• Endurance development through I.M. swims.	• Control of technique, ability to hold and change pace.
• Develop starts.	• Fast reaction time, clean entry, maintenance of speed.
• Review breaststroke and butterfly turns.	• Fast hand to feet speed.

Sets / reps / practices:	Coaching points:
Land based warm-up (5mins) <ul style="list-style-type: none"> Commence this 10 mins prior to pool start time. Led by assistant coach. As per session 1 but use different range of exercises. 	<ul style="list-style-type: none"> Control of body and limb movements. Head coach to brief lane coaches about their role in the pool session whilst this takes place.
Swimming warm-up (5 mins) <ul style="list-style-type: none"> 300 As 100 Fc 100 Bk 100 I.M. 	<ul style="list-style-type: none"> Review standards, check control of effort.
Fc endurance test (400 pacing) (15 mins) <ul style="list-style-type: none"> 3 x 50 Fc to establish correct pace for 400 (20 secs) 400 timed swim. Control first 50, build middle 100's, finish stronger. Emphasise improved turns from set above. 100 Back recovery afterwards. 	<ul style="list-style-type: none"> Control of effort, efficient technique, maintain stroke count, attack each turn, aim is to swim even or negative pace.
Develop starts (20 mins) <ul style="list-style-type: none"> Series of half lengths from a correct racing start. Conduct on two strokes (Fc plus 1 other). Try – teach – demonstration – try again. Lane coach to mark swimmer's dive out of 5 (nobody should be bad enough to get a 1 or good enough to get a 5, thus can the swimmer move from 2 to 3 or 3 to 4). 	<ul style="list-style-type: none"> Stable on block, quick reaction, long flight, clean entry, transfer dive to fast underwater speed, gradual ascent to surface, powerful breakout.
Conduct Fly speed test (10 mins) <ul style="list-style-type: none"> 4 x 25 Fly maximum effort (from push) on 2:00 Record times and stroke counts. 	<ul style="list-style-type: none"> Fast movements, streamlined push, powerful kick, finish hard.
Develop endurance (on I.M.) (20 mins) <ul style="list-style-type: none"> 4 x 75 As 25s Fly / Bk / Brs (20-30 secs). 4 x 75 As 25s Bk / Brs / Fc (20-30 secs). 1 x 200 I.M. (negative pace each stroke). 	<ul style="list-style-type: none"> Hold technique and stroke counts at moderate pace, attacking turns.
Review Brs and Fly turns (10 mins) <ul style="list-style-type: none"> Series of 25s in and out of wall starting from middle of pool. Apply into a full 100 swim with fast attacking turns. Aim for rotation time under 1 sec (from hand to feet touch). 	<ul style="list-style-type: none"> Fast approach, no breath in last 2-3 strokes (fly), time rotations, streamlining and kicking underwater.
Fun activity (10 mins) <ul style="list-style-type: none"> Educational swimming game. 	<ul style="list-style-type: none"> Your choice of game.

LAND SESSION (20-30 mins)

Objectives:	What coach looks for:
<ul style="list-style-type: none"> Perform a short circuit training session and include a land training game. 	<ul style="list-style-type: none"> Swimmers who concentrate and have good body control.

Practices:	Coaching points:
General warm-up (5mins) <ul style="list-style-type: none"> Lead 5 minutes of general warm-up exercises that will loosen muscles, increase blood flow and raise heart rate (e.g. jogging, star jumps, arm swinging). 	<ul style="list-style-type: none"> Consider group organisation in space available and any other safety issues.
Develop a circuit training session (10 mins) <ul style="list-style-type: none"> Perform a range of circuit exercises for a set period of time (e.g. 30 secs work 15 secs rest) and repeat whole circuit 2 times. 	<ul style="list-style-type: none"> Core body stability, whole body strength, controlled smooth movements, importance of correct technique.
Perform a land training game (10 mins) <ul style="list-style-type: none"> Choose and perform a simple land training game (e.g. relays, dodgeball), explain its relevance to the swimmers and ensure they have fun doing it! 	<ul style="list-style-type: none"> Fun, relevant to speed, coordination, endurance etc.
Perform cool down stretches (5 mins) <ul style="list-style-type: none"> Select 5-6 key upper and lower body muscular stretches that can be used as cool downs following land training, ensure the swimmers can perform these with control and correct technique. 	<ul style="list-style-type: none"> Concentration on each stretch, importance of correct technique, injury prevention.

DEBRIEF (10 mins)

Review key points from pool session 2

- 3 or 4 main points of strengths and weaknesses – give praise and feedback.
- Lessons learnt.

Review of third day's activities

- What has been learnt.
- Important points to remember.

Explain exercises to be undertaken as homework prior to day 4.

Outline of Day 4

- Confirm date, time and place with swimmers.
- Outline differences long course training will bring.
- Remind swimmers to continue to work on skills developed in all three days when they return to their home clubs.

Conclude with a motivating message

Academy log sheet: Day 3

Use this log sheet to record details of the training you conducted today. When you return to your home club show it to your coach so that they know what you did.

Name: _____

Session 1 details		Session 2 details	
Date:	Pool:	Date:	Pool:
Warm-up		Warm-up	
FC technique		Brs technique	
Brs kick		Fc speed test	
Fc and Bk turns		Fc and Bk turns	
Bk endurance		Fc endurance	
Fly		Alternative activity	

Fly speed test results			Technique review		Starts practice		IM endurance set results	
25m	Time	SC	Points to work on:		Points to work on:		4 x 75 Fly-Bk-Brs	✓ or X
1							Technique	
2							Turns	
3							Pace	
4							Stroke count	
Av.							4 x 75 Bk-Brs-Fr	✓ or X
Fc 400 pace test result			Turns review		Brs endurance set results		Technique	
#	Time	SC	Points to work on:		100m	Time	Turns	
Technique	Turns	Pace			1		Pace	
400					2		Stroke count	
					3		200 IM	✓ or X
					4		Time	
					5			
Kick set results					Av.		Brs 200 kick result	
#	Time	✓ or X					#	Time
4 x 50 Bk							Kicks	
4 x 50 Fc							200m	

Use this space to add any further notes about today's training

Ask your lane coach to add their comments here



The Academy: A Scottish Swimming development programme

Land training resources

INTRODUCTION

Swimmers need to have a number of qualities to be successful:

- Technique or skill
- Flexibility
- Speed
- Determination and self-discipline
- Ability or "feel" for the water
- Strength
- Endurance

These are all very much linked together. For example, a swimmer with a great degree of flexibility is able to swim with good stroke mechanics without struggling. Similarly, having strong muscles will allow them to hold better technique and will therefore improve their ability to swim faster.

It is important for swimmers to keep working at all of these core skills as they are growing and developing. There are a variety of different training types used to develop these necessary attributes, one of which is the broad medium of land training.

Land training plays a significant part in a swimmers career. It provides the best opportunity to develop strength and speed. It allows young swimmers to develop their all round athleticism and motor skills, as well as providing a variety in the training programme to keep the swimmers interested!

Some component of land training should be incorporated into a weekly training routine on a regular basis. However, if big improvements are to be made, then the swimmers will need to complete some land training exercises in their own time at home.

This section describes the following:

- Flexibility and stretching exercises
- Circuit training exercises for developing endurance and strength
- Games for developing speed
- Games for developing motor skills (co-ordination)

It is not a comprehensive guide to all types of land training, but should give you simple practical advice on the sort of land work that is beneficial to young swimmers aged approximately 10 – 12 years.

General Rules – Swimmers should:

1. Think about the exercise while they are doing it. **TECHNIQUE** is the most important thing, not how many they can do. They should concentrate on doing the exercises to the best of their ability, and do them that way all the time.
2. Wear appropriate clothing that allows them to do the exercises in comfort.
3. Warm up before they begin the circuits. This will help to prevent injuries and also allow the body to work more effectively.
4. Think about safe exercising at all times. Do not allow them to attempt a hard exercise unless they have properly mastered the basic exercises.
5. Remember that every little helps! If they can only manage to do it an extra once or twice a week, then make the effort to do it.
6. Remember to stretch off after they have finished.



FLEXIBILITY TRAINING

Flexibility refers to the range of motion around a joint. Improving flexibility is a basic element of a young athlete's training programme, as good flexibility enables the athlete to perform various movements and skills easily and helps prevent injury.

The ability to perform many movements and skills successfully depends on the range of motion, which has to be greater than the skills of the sport require. For example, arm recovery in butterfly requires both arms to be brought forward over the water while the face is in the water. Young swimmers should have a shoulder flexibility that allows them to make this movement with ease.

Flexibility training is also an injury-prevention strategy. Most sports involve repetitive movement often through a limited range of motion. This can lead to muscle tightness and possibly tears and strains. An immediate, careful and progressively increased flexibility programme will stretch the muscles, relieving muscle tightness and helping to prevent injury. Developing flexibility therefore means not only meeting the needs of the sport but also exceeding the range of motion normally required in the sport and developing a flexibility reserve to prevent injury.

The best time to perform stretching exercises is during a general warm up period (dynamic stretching), and at the end of a training session (static stretching)

Developing flexibility

Young children are flexible, but flexibility performance often decreases with age after puberty, especially for boys because of gains in muscle size, stature and muscle strength. Flexibility therefore requires training throughout the stages of a young athlete's development.

Methods of stretching

The best way to improve flexibility is to perform stretching exercises (!). There are three methods of performing stretching exercises: statically, dynamically and using proprioceptive neuromuscular facilitation (PNF). The experts agree on one thing – that each of these methods of stretching have pro's and con's associated with them! However, in terms of young swimmers we are primarily concerned with dynamic and static stretching:

- Dynamic stretching involves active movements to the limits of the motion, with the athlete not holding the final position
- Static stretching involves stretching to the limit of motion without forcing the stretch and holding the position without movement for a given time. Throughout the performance of static flexibility, the athlete should try to relax the muscles to achieve the maximum range of motion.

THE WARM UP

A warm up consisting of exercises performed immediately before an activity to increase circulation and heart rate is an essential part of a good exercise programme. Warm up exercises provide an athlete time to adjust from rest to exercise. The benefits of a good warm up are:

- Increase in body and tissue temperature
- Increase of blood flow through the active muscles
- Increase in heart rate that prepares the cardiovascular system for work
- Increase in the rate of energy release in the body (the metabolic rate)
- Increase in the exchange of oxygen from haemoglobin
- Increase in the speed at which nerve impulses travel, facilitating body movements
- Allows the muscles to contract and relax faster and more efficiently
- Decrease in muscular tension
- Helps to prepare the athlete psychologically for the workout to come.

It is generally accepted that the best preparation for either a land based or water based workout is a dynamic warm up. This is one that includes various movements including joint rotations and gentle twisting and bending movements. This is preferred over static stretching because these exercises do virtually nothing to increase core temperatures and blood flow, and if they are done without sufficient warm up they can increase the risk of injury.

Dynamic warm up

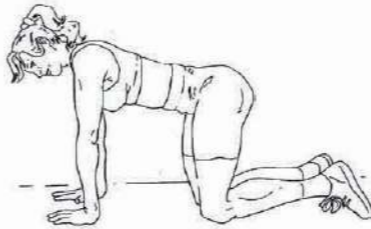
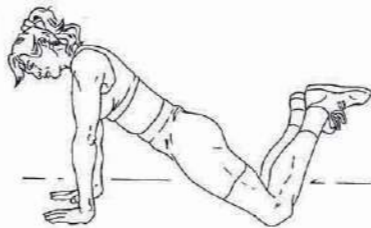
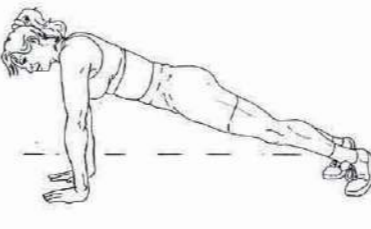

Here is an example of a dynamic warm up. There are numerous types of routine utilised, so feel free to incorporate any movements you have previously learned.

Start with general running, hopping, skipping and sidestepping. Change directions frequently and add variety such as touching the ground, running and jumping when hands are clapped, giving the person next to you a high five etc. This should last for approximately ten minutes. Then move onto the exercises below. All movements should be done with rhythm, and should be done for a few minutes until the area is warmed up.

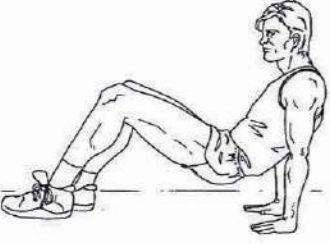
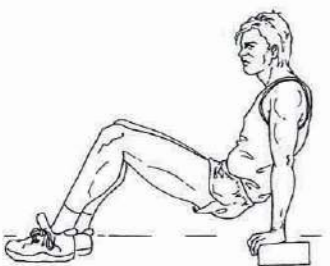
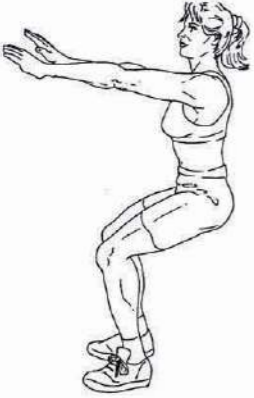
- Circle left arm backwards in a figure of eight motion, then reverse the direction. Repeat with the right arm.
- Starting with arms parallel to the floor, and both arms stretched out in front of you, rotate left arm back around as far as possible (twisting upper torso). Bring hand back to start position, clapping hands at the end. Repeat with right arm.
- Standing with arms by your side, lift left arm to pat yourself on the back and return, repeating with right arm. Try and reach down as far as you can each time.
- Bend over at the waist and swing arms from toe to toe.
- In the same position, now swing both arms up behind the shoulder at the same time.
- Initiate small jumps on the spot, every fourth jump squat down to the floor
- Again with small jumps on the spot, every fourth jump step forward into a lunge and return to the start position
- Stand still with arms outstretched at shoulder height. Keeping your back straight, try and swing the left leg up to reach the right hand, then repeat with the opposite arm and leg

The swimmers are now ready to move onto the main body of the workout.


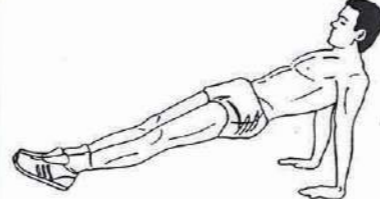
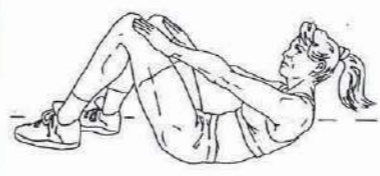

CIRCUIT EXERCISES

Exercise	Description
<p><i>Box Press up (Beginner)</i></p> 	<p><i>Role in swimming:</i> This is an important exercise in the development of the chest and back muscles (pectorals, deltoids, triceps, latissimus dorsi, trapezius and abdominals).</p> <p><i>Starting position:</i> On floor as shown in the diagram, feet crossed, knees in line with hips, back flat and face looking down at the floor. The fingers must point forward.</p> <p><i>Action:</i> The body is lowered by bending the arms to 90°. At this point the elbows should be out to the side. To lift the body, straighten the arms pushing through the chest, arms and hands. The face should look down at all times.</p> <p><i>Progression:</i> To the ½ press up and then the full press up.</p>
<p><i>½ Press up (Intermediate)</i></p> 	<p><i>Role in swimming:</i> As above.</p> <p><i>Starting position:</i> On floor, feet crossed and with the back flat. Use the knees as a pivot point to lower and raise the body (see diagram). To keep a flat back position the stomach (abdominals) has to be kept tight.</p> <p><i>Action:</i> As in the box press up, the body is lowered by bending the arms to 90° with the elbows out to the side. To lift the body, the arms are straightened by pushing through the chest, arms and hands.</p> <p><i>Progression:</i> Full press up.</p>
<p><i>Full Press up (Advanced)</i></p> 	<p><i>Role in swimming:</i> As above.</p> <p><i>Starting position:</i> This is the hardest press up of all and should only be attempted by those achieving excellent ½ press up technique. The body should be flat on the floor, with the hands in line with the shoulders, and placed directly beneath the elbows. The toes should be curled up, resting on the floor.</p> <p><i>Action:</i> With the body held straight, the body is raised by pushing through the chest, arms and hands, straightening the arms until the elbows are almost fully extended. Take care to keep the back flat and to keep looking at the floor. Ensure the hands do not "creep forward" of the shoulder line, and that you lift and lower in a straight line.</p> <p><i>Progression:</i> None.</p>
<p><i>Tricep dips (Beginner)</i></p> 	<p><i>Role in swimming:</i> The tricep muscle is one of the most important swimming specific muscles. It provides most of the power in the arms in all of the swimming strokes.</p> <p><i>Starting position:</i> Looking forward with the feet flat on the floor, legs bent to 90°, fingers pointing to the feet and the elbows slightly bent. Hold the stomach in to keep good form and to just raise the bottom off the floor (refer to the diagram).</p> <p><i>Action:</i> The body remains still as the elbows are bent to lower the body to the floor. Note that the elbows should point backwards. When pushing back up to the start position, keep the elbows back and push through the heels of the hands and concentrate on the tricep muscle.</p> <p><i>Progression:</i> To the intermediate level below and then the advanced level.</p>

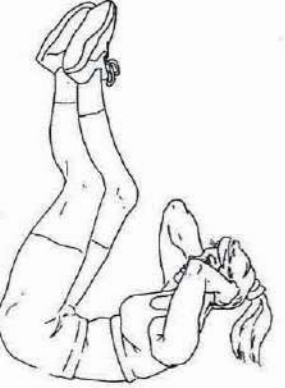
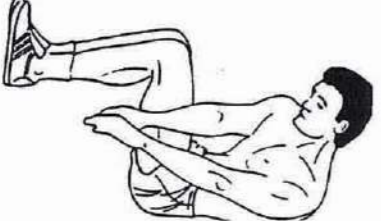

CIRCUIT EXERCISES

Exercise	Description
<p><i>Tricep dips (Intermediate)</i></p> 	<p><i>Role in swimming:</i> As above.</p> <p><i>Starting position:</i> As above, but keep the hips up high to maintain a more "bridge like" position. This allows you to get more depth on the dip and increases the effect.</p> <p><i>Action:</i> The body remains still as the elbows are bent to lower the body to the floor. Note that the elbows should point backwards. When pushing back up to the start position, keep the elbows back and push through the heels of the hands and concentrate on the tricep muscle.</p> <p><i>Progression:</i> Advanced level below.</p>
<p><i>Tricep dips (Advanced)</i></p> 	<p><i>Role in swimming:</i> As above.</p> <p><i>Starting position:</i> As above, but the hands are placed on a platform such as a step, chair or bench.</p> <p><i>Action:</i> The body remains still as the elbows are bent to lower the body to the floor. Note that the elbows should point backwards. When pushing back up to the start position, keep the elbows back and push through the heels of the hands and concentrate on the tricep muscle.</p> <p><i>Progression:</i> The final progression is to complete the exercise with the arms on a chair, and the legs stretched out straight on to another chair of the same height. This puts the full weight onto the tricep muscle, and will develop the most strength. Do not attempt this until you have mastered the advanced level.</p>
<p><i>Squats</i></p> 	<p><i>Role in swimming:</i> This exercise targets the quadriceps muscles (thigh). The quadriceps are one of the major muscle groups in the body so they are relevant to all strokes. However, they are most important for developing really good starts and turns.</p> <p><i>Starting position:</i> Standing upright, arms extended (refer to the diagram) with a straight back and the weight on the heels. Keep the knees soft (do not lock them out).</p> <p><i>Action:</i> Lower the body by pushing the bottom out and down, keeping the heels on the floor. You should try and go down until the bottom is in line with your knees. Straighten the legs and return to the starting position. Your head should be kept up and looking forward.</p> <p><i>Progression:</i> Hold a weight in your hands and complete the exercise. This increases the load on the quadriceps.</p>



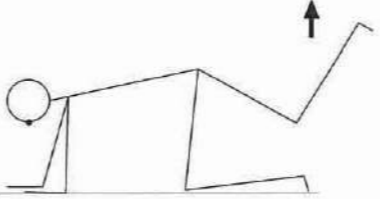
CIRCUIT EXERCISES

Exercise	Description
<p><i>Lunges</i></p> 	<p><i>Role in swimming:</i> Works deep in the quadriceps, and in the gluteus muscles. An important exercise for explosive power in starts and turns.</p> <p><i>Starting position:</i> Stand with feet in line, head up and stomach tight. Keep looking forwards.</p> <p><i>Action:</i> To initiate the lunge, stride forward, bending the back leg at the knee with the back foot fixed. The front knee should bend to 90°. In the halfway position, the front knee should be above the ankle, and the shoulders should be above the hips (refer to diagram). To lift out of the lunge, push with the front leg and bring the feet back to the starting position. Repeat with the other leg.</p> <p><i>Progression:</i> Take the arms into the streamlined position at the bottom of the lunge.</p>
<p><i>Hip Raise</i></p> 	<p><i>Role in swimming:</i> Very important for your core body strength. This exercise helps to develop strong back, stomach and gluteus muscles. It is important for all strokes in maintaining good technique.</p> <p><i>Starting position:</i> The body is lifted into a "reverse press up" position, with the hands directly beneath the shoulders, fingers pointing forwards. The arms are locked, and the body is held in a rigid position. The body should be in a straight line from shoulders to toes.</p> <p><i>Action:</i> After the body has been lifted into the starting position, this is held for 10 – 40 seconds, and it can be repeated 1–3 times. The aim is to hold your body still and straight by fixing the muscles in place.</p> <p><i>Progression:</i> None.</p>
<p><i>Sit ups (basic)</i></p> 	<p><i>Role in swimming:</i> This exercise works the abdominal muscles. Strong abdominal muscles promotes good body position on all strokes, maintains undulation on butterfly, and contributes to good posture.</p> <p><i>Starting position:</i> Lie on your back with knees bent, feet on the floor slightly apart. The legs should be in line with the hips. Keeping the arms straight, rest the hands on the thighs.</p> <p><i>Action:</i> Lift the head and shoulders off the floor before starting, and keep looking through the knees. Curl your body upwards, reaching forwards with your hands to your knees. Lower down to the start position. Remember to breathe out on the way up and to breathe in on the way down.</p> <p><i>Progression:</i> Sit ups (intermediate).</p>
<p><i>Sit ups (intermediate)</i></p> 	<p><i>Role in swimming:</i> This exercise works the abdominal muscles. Strong abdominal muscles promotes good body position on all strokes, maintains undulation on butterfly, and contributes to good posture.</p> <p><i>Starting position:</i> Assume the position for the basic sit up exercises, but this time cross your arms over your chest, so that your hands are placed on the opposite shoulder.</p> <p><i>Action:</i> Curl the chest forwards and up in a similar manner to the basic exercise. Remember the breathing pattern and keep your stomach tight. Lower down under control.</p> <p><i>Progression:</i> None.</p>

CIRCUIT EXERCISES

Exercise	Description
Crunches 	<p>Role in swimming: This exercise works the abdominal muscles. Strong abdominal muscles promotes good body position on all strokes, maintains undulation on butterfly, and contributes to good posture.</p> <p>Starting position: Lie on your back, with your legs stretched up towards the ceiling. Keep your hips on the floor. Hands should either be placed touching your ears (see diagram), or arms stretched up towards your feet.</p> <p>Action: Curl the body up towards the feet by pulling on the abdominal muscles. Keep looking upwards, and if you have your hands on your ears make sure that the elbows are kept out to the side and that you do not pull on your neck to lift up. The same breathing applies as for the sit up exercises – breathe out on the way up, in on the way down.</p> <p>Progression: Twisting crunches.</p>
Twisting Crunches 	<p>Role in swimming: This exercise works the side abdominal muscles. Strong abdominal muscles promotes good body position on all strokes, maintains undulation on butterfly, and contributes to good posture.</p> <p>Starting position: Lie on your back with hips on the floor. Legs should be bent so that the lower leg is parallel to the floor (see diagram). Arms should be in a streamlined position, pointing to the knees.</p> <p>Action: Lift the arms over the knees and down to the opposite side. Pull on the side abdominal muscles to make this movement, lifting the shoulders off the floor at the same time. Take care not to swing the arms. Breathing should be in as you reach to the side and out as you return to the starting position. Repeat to the opposite side.</p> <p>Progression: None.</p>
Calf raise (basic) 	<p>Role in swimming: This exercise works calf muscles. Strong calf muscles contribute to more explosive push offs, and therefore better starts and turns.</p> <p>Starting position: Feet should be hip width apart, arms by side, standing upright.</p> <p>Action: Raise yourself up onto your toes, by contracting the calf muscles. Ankles should be kept over the toes and the knees over the feet. Lower back slowly to the floor. This is then repeated as necessary. Try not to look down, but to keep body a straight, upright position.</p> <p>Progression: Calf raise (intermediate).</p>

CIRCUIT EXERCISES

Exercise	Description
Calf raise (intermediate) 	<p>Role in swimming: This exercise works calf muscles. Strong calf muscles contribute to more explosive push offs, and therefore better starts and turns.</p> <p>Starting position: One ankle is crossed behind the opposite leg, so you are standing on one leg only. Hands should be placed against a wall or other support to help maintain an upright position.</p> <p>Action: Raise yourself up onto the toes of the weight bearing foot and then lower under control. Take care not to lean against the support or to use the support to initiate the lift. The knee of the supporting leg should be kept straight at all times.</p> <p>Progression: Calf raise (advanced).</p>
Calf raise (advanced) 	<p>Role in swimming: This exercise works calf muscles. Strong calf muscles contribute to more explosive push offs, and therefore better starts and turns.</p> <p>Starting position: As the intermediate exercise, but the exercise is carried out on a small step or platform. The toes of the supporting leg are placed on the edge of the step, with the rest of the foot hanging off the back.</p> <p>Action: Raise yourself up onto the toes of the weight bearing foot and then lower under control. The foot can be lowered below the level of the top of the step to provide the maximum range of motion. Take care not to lean against the support or to use the support to initiate the lift. The knee of the supporting leg should be kept straight at all times.</p> <p>Progression: Hold a small weight in one or both hands. This increases the load on the calf muscle.</p>
Gluteal Raise 	<p>Role in swimming: The gluteus maximus is the primary hip extensor, and as such is very important in the freestyle and backstroke leg action.</p> <p>Starting position: Kneel on the floor, resting on the elbows with a straight back. To maintain balance, ensure that the hips are above the knees, and that the weight is evenly distributed at the elbows.</p> <p>Action: The exercise starts by lifting one leg off the floor, keeping the knee bent and extending the sole of the foot towards the ceiling. The face should be kept looking at the floor to ensure the spine is aligned. The abdominal muscles should be tight to maintain the flat body position. Lift the leg without lateral movement, so that the knee is in line with the hip. Care should be taken, as movement beyond this position will place strain on the lower back.</p> <p>Progression: None.</p>

DEVELOPING THE CIRCUITS

There are many different ways to develop circuits aimed at improving muscular strength and endurance in young swimmers. The following guidelines should be adhered to at all times:

- Muscle groups should be alternated to avoid unnecessary overload and fatigue
- The focus should be on quality of movement rather than quantity (technique rather than speed)
- Alternative exercises should be offered to cater for differing abilities (basic, intermediate, advanced)
- An adequate and appropriate warm up is essential prior to commencing the circuits
- Muscle groups should be stretched out before and after the circuit

Exercise	Area	Sets	Repetitions	Time
Hip raise	Core	n/a	(timed only)	(see exercises)
Sit ups	Core	1	20-30	30:15
Crunches	Core	1	20-30	30:15
Twisting crunches	Core	1	20-30	30:15
Gluteal raise	Core	1	8-10 (each leg)	30:15
Back extension	Core	1	20	30:15
Squats	Lower body	1	12-15	30:15
Lunges	Lower body	1	12-15	30:15
Calf raise	Lower body	1	10-12 (each leg)	30:15
Press up (box, ½, full)	Upper body	1	8-10	30:15
Tricep dips	Upper body	1	8-10	30:15

Selection and sequencing of exercises

- The exercises should be sequenced so that you are targeting a different area each time in the sequence – upper body, lower body, core.
- The circuit should last for between 20 and 40 minutes.
- You may add aerobic activities at the end of each sequence such as shuttle runs, star jumps, skipping etc. This helps to add variety, and allows some of the muscle groups to recover.
- Circuits are either done as time controlled circuits, or as repetition controlled circuits.
- For children of this age it is recommended that time controlled circuits are 30 seconds of work with 15 seconds rest.
- A suggested repetition number is outlined above, for guideline purposes only.

Sample circuits

Circuit 1 – Time controlled (30:15)

1. Press ups	5. Tricep dips	9. Press ups
2. Squats	6. Lunges	10. Calf raise
3. Sit ups	7. Back extension	11. Crunches
4. Shuttle runs	8. Star jumps	12. Skipping

x 2

Circuit 2 – Repetition

1. Press ups	4. Tricep dips	7. Press ups
2. Calf raises	5. Squats	8. Lunges
3. Gluteal raise	6. Hip raise I	9. Twisting crunches

x 3

+2 reps each time
20 secs rest between
exercises

GAMES AND THEIR ROLE IN LAND TRAINING

Games are a very useful tool in developing athletic ability in young children. This is because:

- Children are used to playing games in their everyday life
- There is focus on team work, and a sense of belonging which young children identify with
- They allow athletes at all levels of development to experience success
- They promote discipline and a respect for the rules
- They teach fair play and sportsmanship
- They are fun!

Games should not be played on an ad-hoc basis, but should be integrated into your regular land training programme. The types of game that can be used fall into two broad categories:

- Games to develop motor skills
- Games to develop speed

When playing games in a group environment, there are a number of rules that should be followed:

1. Ensure that the area is big enough to play the game
2. Emphasise the need for safety. Children should be well supervised to help control natural enthusiasm and to reduce the risk of accidents
3. The rules of the game should be clear to everyone, and should be strictly adhered to. No cheating or unsportsmanlike behaviour should be tolerated
4. The teams are selected to ensure that everyone has a chance to experience success.
5. Teamwork is stressed, with every child participating in the game

There is no limit to the number of different games that can be played with your swimmers. Use your imagination and give them plenty of variety.

GAMES FOR DEVELOPING MOTOR SKILLS

Double dribble relay

Focus: hand-eye co-ordination, timing

1. In relay teams, the first person runs to the end of the room and returns, dribbling the ball (bouncing it down to the floor) continuously with two hands.
2. They return to their team and pass the ball to the next player who then does the same.
3. This continues until the whole team has participated.
4. Having mastered a double handed dribble, this can then be repeated using single hand dribble (left hand on the way out, and right hand on the way back), an alternating dribble, where the ball is dribbled from left to right continuously, or a partner dribble where two runners go at once, dribbling the ball backwards and forwards between them.

Foot dribble relay

Focus: leg-eye co-ordination

Undertake a relay as described in double dribble, but this time dribbling the ball forward and sideways with the feet. Use both feet.

Skipping relay

Focus: limb co-ordination

In relay teams, this can be done with a variety of different skipping methods such as:

- Running skip
- Double leg skip
- Single leg skip (out on the right, back on the left)
- All of the above, crossing the hands over at the front of the skip

Overhand throw relay

Focus: hand-eye co-ordination, passing accuracy

1. Divide the group into teams. Players line up one behind the other. One team member stands opposite the team with the ball.
2. The ball is thrown to the first team member, who catches it and throws it back.
3. After throwing the ball back to the person in front, the thrower sits down.
4. This continues until the whole team sits down.
5. If the ball is dropped, then the whole team has to start again from the beginning.

Dodge ball

Focus: hand-eye co-ordination, throwing accuracy

1. Two teams start on opposite sides of a room, on their "home wall". Place three balls in the centre of the room.
2. At the start there is a dash for the balls and the players who get them first must throw from their "half" of the room to hit members of the opposite team.
3. If hit, a player must go to the opposition home wall. If a ball comes within their reach then they may use it to hit the opposing player despite being captured.
4. Only hits below the waist are counted. Players are not allowed to punch or hit the ball away. They must dodge the ball and then they are able to retrieve it for use against the opposing team.
5. The game ends when an entire team is captured.

GAMES FOR DEVELOPING SPEED

Running relay

Focus: running form and speed

1. Organise the swimmers into teams.
2. Stand the teams behind a starting line and at the starting signal the swimmers should run down the room around a cone or other object as fast as they can, and return to the starting line, touching the hand of the next player in line.
3. Every time a player finishes, they go to the back of the line.
4. There are 101 varieties of this relay – slalom, hopping, jumping, crab walk, and many, many more!

Fox and squirrel

Focus: quickness and reaction time

1. Designate one fox and one squirrel.
2. The remaining children pair up and hold hands facing each other with arms raised into an arch. They are designated as trees and spread out into the play area.
3. The fox chases and attempts to tag the squirrel. The Squirrel can avoid being tagged by hiding in a tree. If the squirrel hides in a tree, the person facing the squirrel's back becomes the squirrel.
4. The game proceeds until everyone has had the chance of being a fox or a squirrel.

Octopus tag

Focus: Reaction time and high speed with changes of direction

1. Form a large group. Designate one or two people as octopuses. The remaining players line up against the opposite wall. They are the fish.
2. Octopuses yell "Octopus" and the fish run to the opposite wall.
3. If a fish is tagged then they become an octopus and help to catch the other fish.

Fox and hounds

Focus: fast acceleration with quick changes of direction

1. Two teams, four metres apart, each with a safety zone at the wall behind them.
2. One team is the foxes, the other the hounds.
3. Shout one team's name and they chase the other team to their safety zone.
4. If a player is tagged then they join the opposing team.
5. Game ends when everyone has become either a fox or a hound.

Tents and campers

Focus: reaction time and acceleration

1. Athletes pair off and form one or more circles 15 to 20m in diameter. Within each pair is a tent that stands with their feet apart and a camper who sits in front.
2. The instructor shouts out words that begin with "t" or "c" sounds. When the instructor calls tent or camper, the appropriate member of each pair runs around the circle and either stands behind the camper or crawls through the tent.
3. Anyone caught moving when a word other than tent or camper is called has to wait out 1 turn.

These are not the only games that you can play! Relays can be done throwing balls, passing them overhead, or between the legs (or both), or they can be done sitting down and passing balls to the side. All it takes is a little imagination! You might like to use a combination of circuits and games by doing relays that incorporate circuit exercises in them.

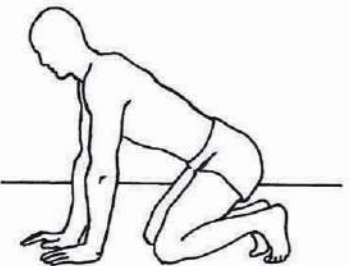

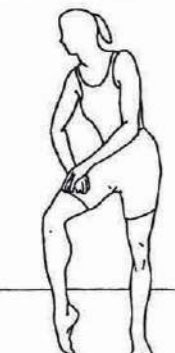
Just remember to stick by the golden rules:

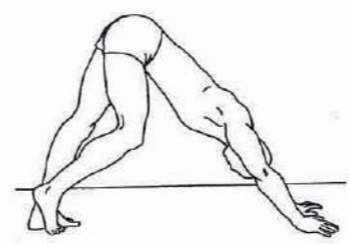
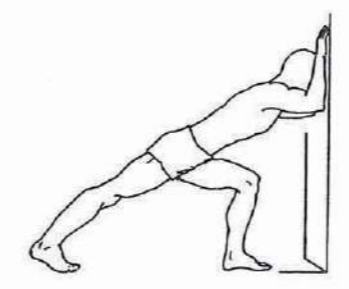
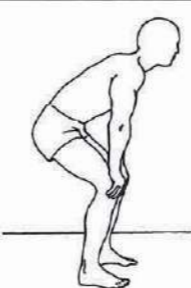
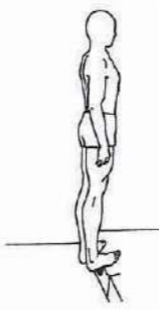

- Safety first
- Team playing – not win at all costs
- Fair play all the time
- FUN, fun and more fun!



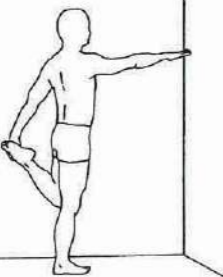
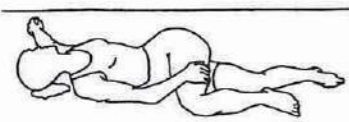
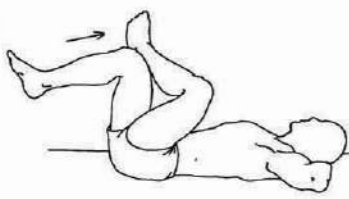
THE COOL DOWN

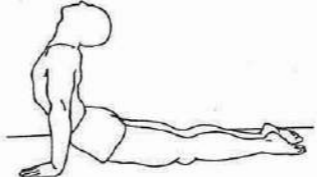
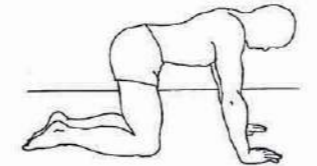
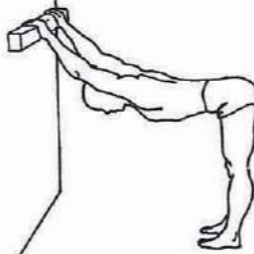


Cooling down is defined as performing a group of light exercises immediately after an activity to provide the body with a period of adjustment from exercise to rest. The cool down period is valuable for swimmers who want to maintain or enhance their flexibility. Static stretching can be performed here to help to lengthen any muscles that have been shortened or tightened through exercise, and to rebalance the muscle groups. It is very safe, and very effective to do static stretching during the cool down.

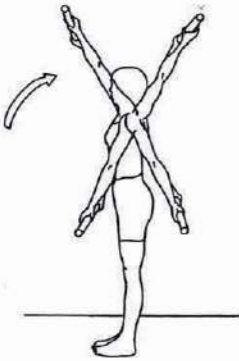
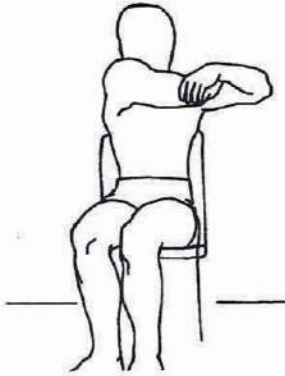
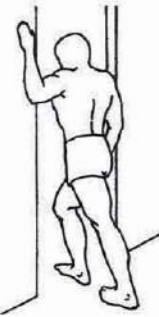

Again, there are many stretching exercises that you can do as part of the cool down. The following stretches are probably the most important ones relating to swimming.

Feet and ankles	
	<ul style="list-style-type: none"> Kneel on all fours with your toes underneath you. Exhale and lower your buttocks backward and downward.
	<ul style="list-style-type: none"> Sit with one leg crossed over the opposite knee. Grasp your leg above the ankle with one hand and the top of your foot with the other hand. Exhale and pull the bottom of your toes toward the ball of your foot.
	<ul style="list-style-type: none"> Standing with one leg slightly in front of the other, turn your forward foot under so the top of your toes contacts the floor. Exhale, shift your weight forward, and press your toes downward.

Lower legs	
	<ul style="list-style-type: none"> From a push up position, move your hands closer to your feet to raise your hips and form a triangle. This position can also be modified by resting your elbows or head on the floor. At the highest point of the triangle slowly press your heels to the floor, or alternate slowly flexing one knee while keeping the other knee extended.
	<ul style="list-style-type: none"> Lean forward against a wall with one leg bent forward and one leg straight with the heel raised. Exhale, bend your arms, lean toward the wall and slowly shift your weight forward while attempting to press your rear heel to the floor.
	<ul style="list-style-type: none"> Stand with your hands on your hips or knees. Keep the heels on the floor and parallel to one another. Exhale, flex your knees and slowly shift your weight downwards while keeping both feet flat on the floor.
	<ul style="list-style-type: none"> Stand with the balls of your feet balanced on an edge or a step. Exhale and lower your heels to the floor.
Hamstrings	
	<ul style="list-style-type: none"> Sit on the floor with one leg straight and one leg bent at the knee with the heel touching the inside of the opposite thigh. Lower the outside of the thigh and calf of the bent leg onto the floor. Exhale, keep the extended leg straight, and lower your upper torso onto your thigh.

	<ul style="list-style-type: none"> • Lie on your back with your legs flexed and your heels close to your buttocks. • Inhale and extend one leg upward. • Exhale and slowly pull the raised leg towards your face, keeping the leg straight. • Do not place hands on the knee joint – either above or below the knee.
Adductors	
	<ul style="list-style-type: none"> • Sit on the floor with your buttocks against a wall, your legs flexed and spread, and your heels touching each other. • Grasp your feet and pull them as close to your groin as possible. • Place your elbows on your inner thighs or knees, exhale, and push your legs to the floor. • Be sure to keep your back straight when performing this exercise.
Quadriceps	
	<ul style="list-style-type: none"> • Stand holding onto something for balance. Flex one knee and raise your heel to your buttocks. • Slightly flex your supporting leg, exhale and grasp your raised foot with one hand. • Inhale and slowly pull your heel towards your buttocks, without over-compressing the knee.
Hips and Gluteals	
	<ul style="list-style-type: none"> • Lie on your back with your legs extended. • Flex one knee, raise it to your chest and grasp with the opposite hand. • Exhale, pull your knee across the body to the floor, keeping your elbows, head and shoulders flat on the floor.
	<ul style="list-style-type: none"> • Lie on your back with your left leg crossed over your right knee. • Exhale and flex your right knee, lifting your right foot off the floor, and letting it push your left foot towards your face, keeping your head, shoulders and back flat on the floor. • You may grasp below your right knee with your hands and pull your leg in to assist this stretch.

Lower torso	
	<ul style="list-style-type: none"> • Lie face down on the floor with the body extended. • Place your palms on the floor by your hips with your fingers pointing forwards. • Exhale, press down on the floor and arch your back while contracting the gluteals to prevent excessive compression of the lower back.
	<ul style="list-style-type: none"> • Kneel on all fours with your toes pointing backwards. • Inhale, contract your abdominals and round your back. • Exhale, relax your abdominals and return to the flat back position.
Upper back	
	<ul style="list-style-type: none"> • Stand with your feet about 1 metre from a wall with your hands on the wall at shoulder height. • Keeping your arms and legs straight, flex at the hips and flatten your back. • Exhale and press down on the wall to arch your back and press through the shoulders.
Neck	
	<ul style="list-style-type: none"> • Sit or stand with your left arm flexed behind your back. • Grasp the elbow from behind with the opposite hand and pull it across the midline of your back to keep the left shoulder stabilized. • Exhale and lower your right ear to your right shoulder.
Pectorals	
	<ul style="list-style-type: none"> • Kneel on the floor facing a chair. • Interlock your forearms above your head and bend forward to rest them on top of the chair with your head dropping beneath the surface. Exhale and let your head and chest sink to the floor.

Shoulders	
	<ul style="list-style-type: none"> Stand with your legs together. Grasp a towel in front of your hips with a wide overgrip (palms facing down). Inhale and raise your arms overhead, keeping them straight and symmetrical with no twisting to the side as they rotate in the shoulder joint and end up behind your hips. Inhale and reverse the direction.
	<ul style="list-style-type: none"> Sit or stand with one arm raised to shoulder height; Flex the arm across the shoulder. Grasp your raised elbow with the opposite hand, exhale and pull your elbow backwards.
	<ul style="list-style-type: none"> Stand facing the edge of a door frame or wall. Flex your elbow and place your hand on the frame. Exhale and turn away from your fixed arm.
Arms	
	<ul style="list-style-type: none"> Sit or stand with one arm behind your back and as far up your back as possible. Lift your other arm overhead, flex your elbow and interlock your fingers. Repeat the opposite way around.

The Academy: A Scottish Swimming development programme

Food matters!

INTRODUCTION

When you exercise, your body must start producing energy very much faster than it does when it is at rest. The muscles start to contract more quickly, the heart beats faster pumping blood around the body more rapidly and the lungs work harder. All this requires extra energy. Where does it come from and how can you make sure you have enough to last through a training session?

Where does energy come from?

Energy comes from the food that you eat. There are three groups of food and drink that produce energy:

- Carbohydrate
- Fat
- Protein

When you eat a meal or have a drink these groups are broken down in your body. Then they are sent into the bloodstream. Carbohydrates are used mainly for energy in the short term, while fats are used as a long term energy store. Proteins can be used to produce energy in 'emergencies' (e.g. when carbohydrates are in short supply) or when they have reached the end of their useful life. Sooner or later, all food and drink groups are broken down to give off energy.

What is fatigue?

Tiredness! Fatigue during exercise comes in many forms. You may find it harder to swim certain times at the end of a session, or it may be harder to concentrate on technique, or you may find that you are unable to swim with good technique because you have lost co-ordination. This is fatigue!

How can I delay fatigue?

You can help to delay fatigue in the following ways:

- **Start exercising with full energy stores**
Think of it like setting off on a car journey with a full tank of petrol. The more you have to start with, the longer you can keep going. If you start with only half a tank of petrol, you will either have to stop halfway, or go more slowly to conserve your fuel.
- **Reduce the rate at which you are using energy**
The rate at which you use energy depends on the type of the exercise, your fitness level and the temperature. Exercising in hot conditions uses up more energy. Try and pace yourselves – if you start out too fast then you may run out of fuel before the end of the session!

How does diet help to delay fatigue?

A diet that is rich in carbohydrates will mean you have full energy stores. This will help you to exercise for longer and help you perform at your best.

How much carbohydrate should I eat?

You should get approximately 60-70% of your energy from carbohydrates. In practice, make sure that you base all your meals and snacks around foods which are high in carbohydrates.

Carbohydrates are sometimes divided into two types: Simple (sugars) and complex (starches and fibres). Examples of these are shown in the table below:

High in simple carbohydrates	High in complex carbohydrates	A mixture of simple and complex
Sugar (white and brown)	Flour (brown and white)	Cakes
Jam, honey and other preserves	Bread (all types) Pasta, rice, noodles	Biscuits Puddings
Fruit (fresh, tinned and dried) Soft drinks	Oats and other grains Unsweetened breakfast cereals	Sweetened breakfast cereals (Frosties etc.) Sweet pastries
Yoghurt Fromage frais	Pulses (beans, lentils, peas)	Pies Flans
Sweets, chocolate	Potatoes	Cheesecakes
Ice cream, felly	Parsnips	Bananas
Milk	Sweetcorn (unsweetened)	

Which type of carbohydrate is best?

One type is not necessarily better than the other is. Different carbohydrates are suitable for different circumstances. Carbohydrate foods that contain a range of other nutrients should make up the main part of your diet. In general complex carbohydrates (the middle column) and the natural simple carbohydrates (e.g. fruit and milk) are better for you than sugary foods e.g. soft drinks, sweets and chocolates.

In practice, aim to get most of your carbohydrates from foods providing a good nutritional package, i.e. bread, grains, cereals, starchy vegetables, pulses, fruit and dairy products.

What carbohydrate to eat and when?

	Before exercise	During exercise	After exercise	Between sessions
How much?	50g	30-60g	1g/1kg body weight	60% of energy
Time period	5-30 minutes	Begin after 30 minutes; regular intervals	0-2 hours	Minimum 4-6 meals/ snacks (for twice daily training)
Examples	<ul style="list-style-type: none"> 2-3 bananas ½ pt isotonic sports drink & 1 banana 3oz dried fruit jam sandwich (2slices bread with 2tbsp jam) 1 energy bar 	<ul style="list-style-type: none"> 1l diluted squash (3-6%) 1l sports drink Energy bar 2-3 bananas 2-3oz dried fruit 	<ul style="list-style-type: none"> Banana sandwich 3oz raisins 4-5 low fat biscuits 250ml glucose polymer drink (20%) 8oz potato 	<ul style="list-style-type: none"> Pasta with lentils/low fat cheese /chicken/fish Rice with beans Noodles with chicken Beans on toast Potato with tuna/cottage cheese

Eat a balanced diet!

You should be able to get all the vitamins and minerals you need from a well planned diet. This should include a wide variety of foods from each of the main food groups in the proportions outlined below:

Foods	Number of portions per day
Cereals and starchy vegetables	5-11
Fruit and vegetables	5 or more
Milk and dairy products	2-3
Meat, fish and vegetarian alternatives	2-3
Oils and fats	0-3

Eat less of the following:

- Butter, margarine and other spreading fats
- Fried foods
- Fatty meats and processed meat products (e.g. sausages, burgers, meat pies)
- Pastry dishes
- Cakes and biscuits
- Chocolate
- Crisps and similar potato/corn/wheat snacks

Have these instead:

- Semi-skimmed or skimmed milk instead of full fat milk
- Low fat spread or peanut butter instead of butter or margarine
- Low or reduced fat cheese instead of ordinary cheese
- Jacket or boiled potatoes instead of chips
- Chicken, fish or lean meat instead of fatty meat, burgers and sausages
- Crackers, rice cakes or fruit bars instead of crisps, biscuits and cakes
- Fresh fruit instead of chocolate

Make the following changes:

- Try not to have fried food
- Top baked potatoes with fromage frais, yoghurt, half fat crème fraîche or baked beans
- Remove skin from chicken or turkey
- Grill, bake stir fry or boil instead of frying
- Choose lean cuts of meat and trim off as much fat as possible

Putting it all into practice!

You now have a good understanding of the main principles of sports nutrition, and the time has come to put it all into practice. Knowing the theory is only half the battle. Fitting it all in with your lifestyle is the other!

Eating on the run – what can I do?

Try and organise your food before you need it. Take a supply of healthy snacks to school and swimming with you. This way you can keep up your energy levels, and you won't be tempted to buy crisps and chocolate from the machines when you are hungry!

I often have to eat late in the evening after training – what are my best choices?

If you train in the evening and do not arrive home until late you should plan to have most of your food during the morning and afternoon. Have a big breakfast, and make lunch the main meal of the day. Have a snack about 1-2 hours before your evening training session. This way you will feel less hungry after training.

It is still important to eat after training to "refuel". Good late evening choices include pasta with a tomato based sauce, breakfast cereal, fruit and milk, beans on toast and thick sandwiches.

I have to eat the same meals as the rest of my family!

- The whole family can benefit from eating healthy meals – there is no need for separate dishes!

Hopefully this will help you to adopt healthier eating habits. Try and find foods you like and try and eat a variety of foods. If you eat well, you will find that you will pick up fewer illnesses, have fewer injuries, have more energy and feel great!

SUMMARY

Good breakfasts

- Cereals – try some whole grain varieties for a change e.g. branflakes, shredded wheat, porridge, weetabix, muesli etc. Add chopped banana, or other fresh and dried fruits. Use skimmed or semi-skimmed milk. Do not stick to the same one every day, and don't always go for a sweetened cereal (e.g. Frosties).
- Toast – try wholemeal or brown for a change. Always go for thick sliced bread. Take care not to smother it in high fat spreads, (butter, peanut butter, chocolate spread), use a low fat alternative such as honey or jam.
- Porridge sweetened with honey, raisins and dried apricots.
- Scotch pancakes with syrup
- Toasted crumpets/teacakes with a little butter
- Low fat milkshake with banana/fresh fruit/low fat yoghurt
- Fresh fruit and yoghurts
- Beans on toast/boiled egg and toast

Great snacks

- Filled sandwiches (thick sliced) and rolls. Choose fillings such as cottage cheese, peanut butter, banana, salad, honey, marmite, tuna, chicken, turkey, ham or combinations of these (e.g. ham salad)
- Thick vegetable soups and crackers
- Rice or pasta salad
- Beans or scrambled/poached eggs on toast
- Toasted sandwiches (not too much cheese)
- Pizza slice (thick base) with a tomato based topping
- Jacket potato and filling
- Risotto
- Tinned spaghetti in a tomato sauce
- Pasta with a light tomato based sauce. Thick creamy sauces or cheese-based sauces are very high fat and so should not be chosen on a regular basis.

Snacks on the run

- Sandwiches as described above
- Low fat yoghurt and fromage frais
- Fresh fruit (apples, bananas, nectarines, oranges, grapes, kiwi fruits)
- English muffins, scones, crumpets, potato cakes (no butter or margarine!)
- Scotch pancakes (no butter or margarine!)
- Dried fruit (raisins, apricots, bananas, figs, prunes)
- Cereal bars
- Fruit juice and diluted squash
- Nuts and dried fruit combinations
- Rice cakes, crackers and dry breakfast cereals

Fantastic main meals

Basically, anything goes! All you have to remember is that you should look at your plate and see that it is approximately three-quarters covered with carbohydrate based foods. Then just keep a check on the fat content. Add to your meal by eating bread with it, or drinking fruit juice. This will boost your carbohydrate content.

Low fat puddings should be eaten afterwards. This could be fresh fruit, yoghurts, rice pudding, pancakes, baked apples, fruit salad, muffins, home made fruit cake, angel delight etc.

Competition meals and snacks

It is important that you eat the right foods before you compete. You don't want to go into the race feeling full and heavy, but neither do you want to be on the blocks with your tummy rumbling! Pick something that is full of carbohydrate, not too heavy, and is enjoyable to eat. Always have a drink with it to help you stay in top condition.

Suitable meals and snacks are:

- Breakfast cereals with low fat milk
- Toast or bread with jam or honey
- Sandwiches or rolls with banana, honey or jam
- Pasta or rice with low fat sauce
- Buns and muffins
- Rice cakes or crackers with banana or jam
- Baked potatoes with a low fat filling (not cheese, and avoid mayonnaise)
- Fruit – bananas, oranges, grapes, raisins
- Energy bars
- Carbohydrate drinks

Many of these can be eaten between events on the poolside to help you keep up your energy levels between events. Swimmers do not eat chocolate, crisps and fizzy drinks as part of your competition diet. Any little "treats" can be saved for after the competition has ended. If you are competing over two or more days, then leave these for the end of the last day (and not in the evening between days of competition).

I hope this has been helpful, and will help you all to become better athletes and healthier people. Remember, you are what you eat!!