SWIM FOR (YOUR) LIFE

A Handbook for Adult and Masters Swimmers and Coaches

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PREFACE

I have been involved in competitive swimming as an age group swimmer from age nine, then as an Australian representative, then as a serious Masters competitor. I now swim for health and fitness reasons – and sheer enjoyment – and don't swim competitively, although perhaps I will again one day. I have also been a swimming coach for most of my employment career, beginning at the elite competitive level then continuing at this level for many years before coaching adult squads and squads of younger swimmers who swim for health and fitness reasons for the latter part of my career. My career arcs in both swimming and coaching reflect the changes in the role swimming has played in my life, the priority I have given it and my increasing awareness of the range of reasons that it can hold a very important place in people's lives.

Throughout my coaching career I have written many coaching manuals, articles, essays and presentations for my employers, the coaching bodies I have belonged to, Masters Swimming organisations and clubs and/or for my own reference.

I decided to collate the best and most relevant of these pieces into this Handbook, edit and tailor them for an adult and Masters Swimming audience where necessary and also add some new material that should be included.

Much of the content is relevant to *all* adult swimmers, whatever the reason they swim and whatever their standard and ability, while some content is really only relevant to Masters competitors. Hopefully the entire Handbook will be of use to all adult squad and Masters coaches. Part One ('Just Swim'), almost exclusively contains information written for *all* adult swimmers and coaches; and Part Two ('Masters Competition') contains information for Masters competitors and coaches, including a chapter on open water competition.

I have not included any information in this Handbook about dry land training for swimming, nor the swimming-related benefits of any other form of exercise. There are far better sources for this information. All I would say is that, subject to any illness or injury restrictions, any form of exercise done sensibly is good exercise and probably at least somewhat beneficial for swimming.

I hope every adult swimmer can find something in this Handbook to improve and enhance their swimming experience, and, for Masters competitors, improve their competitive performance.

GLOSSARY/ABBREVIATIONS

Distances

50, 100, 200 etc. – 50 metres, 100 metres, 200 metres etc.
Km – kilometre(s)

Strokes

BF – Butterfly
BK – Backstroke
BS – Breaststroke
FS – Freestyle
IM – Individual Medley

General

Chps – Championships
Long Course – In a 50-metre pool
Short Course – In a 25-metre pool
Meet – A swimming competition
OW – Open water
PB – A personal best time, i.e. a swim that was a lifetime personal best time at the time of the swim. Swimmers have PBs in long course and short course.
Program – The complete list of sets to be completed in a training session.
Relay Start – The start used in the second, third and fourth legs of a relay.
Set – A number of repetitions of a particular distance done in training. e.g. a 'set' of 6x400 FS, done on a particular time cycle, e.g. on 6.00, meaning six 400s FS leaving every six minutes for each 400.
Split – An intermediate or segmental time in a race, or an individual's time in a relay.
Taper – The progressive reduction in volume and intensity of training in the weeks leading up to a major meet.
Time Cycle – The time on which a swimmer leaves for each repetition of a set (see example in **Set** above).

PART ONE – JUST SWIM

1. SWIM FOR (YOUR) LIFE

Way back in 1974 when I got really seriously involved in competitive swimming, just about the only people who swam up and down swimming pools were serious competitive swimmers. Public pools were for cooling off on hot summer days and playing games in, and it was rare to even see a public pool set up with lane ropes for lap swimming. When competitive swimmers stopped competing they tended to stop swimming altogether.

How times have changed! The 1970s and 80s saw an exercise revolution which was prompted by an ever-increasing awareness of the benefits of exercise, in particular its role in general health and wellbeing. Swimming was slower in becoming a part of this revolution as many people initially took to the streets to jog or went to the gym to exercise, because running and gym exercises were activities everyone was capable of doing, whereas swimming was a skill that many had not fully mastered.

Gradually the word spread regarding the special benefits of swimming. Studies have shown that swimming is one of the best forms of exercise for developing aerobic fitness and maintaining cardiovascular health. Swimming uses more muscle groups than many other forms of exercise and is excellent for keeping the body supple, and muscles and joints mobile. A huge advantage is that one's body weight is supported while swimming, meaning there is not the load-bearing or impact strain on joints and muscles that occurs while jogging or performing other land-based forms of exercise, and hence injury risk is significantly lower for swimming. A unique feature of swimming is that because most of your senses are dulled with your head in the water, this relative sensory deprivation means swimming can become a form of moving meditation that gives a feeling of relaxation and peace unlike that offered by other forms of exercise. And all you need is a swimsuit, goggles and a pool – or the ocean, a lake or a river!

Some swimmers prefer getting their swimming 'fix' in the clean, clear, chlorinated, clinical and controlled environment of a swimming pool, with lane ropes, the black line and (perhaps) using a pace clock; while others get it being in a natural environment – mostly the ocean – with all the added attractions, variables and stimulation that involves. Some enjoy both! (I don't specifically discuss recreational OW swimming in this Handbook, but do discuss the basics of OW competition in Part Two, Chapter 7, *Open Water Competition*.)

Likewise some swimmers prefer swimming on their own, doing their own program, while others prefer the more social environment of a group or a squad with a coach. Whatever floats your boat – or body!

As the exercise revolution gained momentum, ex-sportsmen and women realised they didn't have to stop competing either, and Masters competition began appearing in many sports, including swimming.

These days it is very heartening to see so many people of all ages keeping fit and testing themselves against the clock and against people of similar age in many sports. I have been

involved in Masters swimming since the mid-1980s and it has been remarkable to see the progress and the times the best swimmers in each age group can now do. If you want to be amazed, look up the Masters world records for your age group.

However, for both younger competitive swimmers and even more so for Masters competitors, the real value of competition lies in the motivation it gives you to swim regularly – it doesn't really matter how fast you swim – because swimming regularly will provide many lasting physical and psychological benefits that may well contribute greatly to the length and quality of your life.

So whether you want to swim fast in the pool, and/or open water, improve your swimming skills, keep fit and be healthy in mind and body, lose weight, practice moving meditation, be healed or restored, or just experience the delights of being able to move nicely through another medium – get in and swim! Swim for (your) life!

2. HEALTH AND INJURIES

As discussed in the previous chapter, swimming is extremely good for your physical and mental health, and especially so for your cardiovascular system. And being a non-weight bearing exercise there is minimal injury risk in swimming.

Nevertheless before undertaking regular swimming for exercise or any form of competition, it is important to establish that you are healthy and fit enough to begin the swimming regime you intend to follow. If you are starting from scratch, or from very modest or irregular amounts of swimming that you intend to increase, it is highly advisable that you discuss what you intend to do with a doctor and/or have a medical check-up if necessary to ensure you are healthy enough and physically capable of doing the amount of swimming you intend to do. I have no medical training so won't go into any detail, but suffice to say you should at least ensure your heart and cardiovascular system are in sufficiently good condition. Also alert your doctor to any disease or other medical condition(s) you have which may impact upon your ability to swim as you intend. Obviously the need to take these precautions increases if you don't have a history of regular exercise, and the older you are.

It is only common sense to begin your swimming program at a low level and/ or increase your training in increments, gradually increasing both volume and intensity. It is better to err on the side of taking things a little too easy than overdoing it.

No matter how fit you are and irrespective of your exercise background, if at any time you have any problems with your heart rate or any arrhythmia, breathing, dizziness/lightheadedness or excessive fatigue, immediately consult your doctor. Thinking I was very fit and healthy, I ignored symptoms of what turned out to be the heart arrhythmia atrial fibrillation (ironically caused by my long history of very intense aerobic exercise) until I had a stroke caused by the atrial fibrillation. So err on the side of caution! But don't be alarmed; done sensibly swimming will almost exclusively do you good!

Many swimmers will go through their careers without a swimming injury, aside from the odd muscular niggle which usually heals itself. But they do occur. The most common injury site for swimmers is the shoulder, where pain can be experienced in the rotator cuff

muscles or associated tendons and bursa, or in the acromioclavicular joint. You should immediately refrain from swimming if you experience shoulder pain and consult your doctor or physiotherapist. Shoulder problems can quickly become chronic without sufficient rest and treatment, and the side effects caused by then 'favouring' the shoulder so as not to perform the action(s) that cause the pain can cause further problems. This I also know from experience. Likewise for knees, which can also be an issue for breaststrokers in particular. Persistent pain in any joint or muscle should prompt medical intervention.

In short, consult your doctor sooner rather than later about any health problem or injury, then follow the advice given; and listen to your body with respect to your level of effort and giving yourself sufficient recovery.

3. TYPES OF TRAINING

The basic principles of this chapter are relevant for *all* adult swimmers, with the details being more relevant for Masters competitors.

Much has been written over the years about the different types of training and sets that competitive swimmers should do to achieve optimal performance, and the training effects of each. There is much discussion in the exercise physiology and coaching communities about the physiological and biochemical justification for each type of set and the energy system(s) supposedly being used in each type. There's aerobic, max VO_2, anaerobic threshold, lactate tolerance, high velocity overload, ultra short race pace… the list goes on. These discussions include how one monitors whether a swimmer is doing a set as prescribed using heart rates, intramuscular lactic acid levels, perceived level of exertion and more. Confused? I am. How does a swimmer or coach know what type or combinations of types of training to use for maximum benefit or for optimal performance in the swimmer's best event(s)? Especially as what is supposedly scientifically proven as being appropriate has changed over the years and training types and their monitoring methods go in and out of fashion? As a coach at the elite level I always struggled with how to determine whether any swimmer, let alone a squad, was doing a set as required or using the desired energy system, given all the potential variables. And how does one scientifically prove a certain program, type of training or set is the best for any individual, group or race distance anyway considering all these potential variables? Nevertheless, even if only by trial and error, much progress has been made in terms of specificity of training for different individuals or distances, especially from the days where virtually everyone trained like distance swimmers – with high volume with minimal rest. And this is all without considering technique and skill-based training, which will be addressed in a later chapter (see Part One, Chapter 5, *Technique and Skill Training*).

I don't think it all needs to be so complicated, certainly for adult swimmers, and even for Masters competitors, whose age and accompanying changes in physiology, biochemistry, capacity and required recovery time no doubt mean that many of the complex considerations for the elite swimmer do not apply or are much less relevant.

Except perhaps for the younger Masters competitor who can still train and race at somewhere close to elite level, I believe it is sufficient to categorise training into three

basic types of sets (excluding technique and skill-based sets). These types, with comments and examples are as follows:

Aerobic

- All swimming events over 50 require significant levels of basic aerobic endurance, with increasing levels required the longer the race distance – and the longer any distance takes for any individual. While aerobic training was no doubt overdone in the past, it is still an important ingredient of training for most events.
- Aerobic sets include long continuous swims; sets of longer distances (e.g. 400s); or sets with repetitions of any distance, with short rest time cycles.
- At all ages it is far easier to improve how fast you can swim over longer distances than it is to improve how fast you can swim over short distances, which depends far more on your innate physical and physiological characteristics. In other words it is easier to improve or maintain your aerobic capacity than your pure speed.
- Aerobic training does not necessarily need to be done at high speed or heart rate.
- It is easier to initiate and practise technique and skill elements or changes while swimming aerobically.
- Aerobic swimming seems to have the most beneficial effects on physical (and perhaps mental) health, which hopefully even for serious Masters competitors is still the primary motivation for swimming.
- It's anecdotal evidence I know, but towards the end of my elite career and early in my Masters career, I maintained a high level of race performance, and even swum PBs over 50 and 100, by doing little other than aerobic swimming (often just a straight 1500 at increasing speed). And I have seen many other swimmers swim fast over all distances purely on aerobic training.

Speed/Pace

- Obviously any competitive swimmer needs to do at least some training at the speeds of their race distances ('race pace'). I intend to cover 'race pace' training in more detail in a later chapter (see *Training* in Part Two, Chapter 5, *Pace Judgement*), so will do no more than use the term here.
- Under this heading I include all sets where speed or pace is emphasised or relevant apart from sprints (see *Sprints* below).
- Speed/pace sets include:
    - sets with moderate, increasing or longer rest time cycles where swimmers 'descend' times swum (i.e. with each repetition swum faster than the previous one) or maintain the fastest possible average time throughout the set
    - sets with long rest time cycles with each repetition swum with maximum effort or swimming one easy repetition followed by one at maximum effort
    - any other sets practising race pace

Sprints

- It is important at least for those who swim 25 and 50-metre races, or just enjoy swimming as fast as possible, to practise swimming at absolute maximum speed.

- This type of training can really only be done over 25 and possibly 50, and with a set length and with a time cycle that allows the swimmer to recover sufficiently to be able to swim at – or at least close to – maximum speed.
- I am inclined to think that this type of training has a particular significance for Masters competitors, because as we age we seem to gradually lose the ability to move limbs and contract muscles as quickly as is required for short distances, so there is a need to practise the neurological and muscle recruitment required to 'remind' the brain and muscles how to do this.

Progression

In Part Two, Chapter 5, *Pace Judgement*, I discuss how crucial pace judgement is for optimal competitive performance, and how to train to assist in being able to learn appropriate pace judgement.

To summarise, I am absolutely convinced that the single biggest factor in a swimmer swimming as fast as they are capable of in any race is how well they pace their race. Proper pace judgement means swimming every race at (at least relatively) even speed, and even speed requires gradually increasing effort, or a progression of effort, to counteract increasing fatigue.

In general terms, if you want to improve competitive performance, or just want to complete any training set as efficiently and beneficially as possible it is best to apply 'progression' to all you do in training.

How do you incorporate progression into your training?

- Firstly and most obviously, whether you are swimming at maximum effort or not, always swim any repetition in a set with even pace and, especially for maximum efforts, practise how you need to feel at the various stages of every distance to ensure progressive energy expenditure and even speed.
- Do 'descending' sets (with moderate or long rest time cycles) where each repetition is faster than the previous one.
- When doing shorter rest sets, use a decreasing time cycle, beginning the set with one or more repetitions on a moderate rest time cycle, and progressively reducing the cycle for the next one or more repetitions, finishing the set with one or more repetitions on a challenging time cycle.
- In any set you do, whether specified as a descending set or not, and irrespective of the time cycle, try and swim at increasing or at least even speed, and finish the set with the last repetition being the fastest one.

It's all part of the plan to develop an internal 'operating system' that will always deliver progressive effort and therefore even speed.

For serious Masters competitors it *is* important what combinations of types of training you do, especially with regard to how you achieve optimal performance over your best race distance(s).

However for the average adult swimmer the balance of types of training done is of far less significance, although I would suggest that if health and fitness benefits are the top priority, as they are for most adult swimmers, most time should be spent on aerobic swimming, which is the most time-efficient way for busy people to get a certain amount of swimming done anyway. But even for the non-competitor it is advisable to do some of all training types, if not for the slightly different physiological benefits of each type, then for the sake of variety, which I think is important to maintain interest in and commitment to training. The possibilities for sets are endless, even within each type of training I identify. So train optimally for your best event(s) if that's your thing, but do a range of different types of sets to challenge yourself and have fun.

4. PRINCIPLES OF TECHNIQUE

Technique, as defined by the movements a swimmer executes while performing any of the four strokes (including starts and turns), is obviously crucial to swimming speed. All swimmers should be rigorously taught the basic movement patterns that are generally accepted as constituting good technique, preferably from a young age, using drills, technique-based sets, and regular individual correction. The correct movement patterns will often need to be reinforced for the duration of a swimmer's career.

There are only two underlying factors that determine swimming speed, namely propulsion and resistance/drag. Hence every aspect of technique (bar the minor exceptions mentioned below) should relate to either increasing propulsion or decreasing resistance.

The only possible exceptions are the aspects of technique that relate to the recovery of the arms in butterfly, backstroke and freestyle (i.e. their movement over the water), as these movements can neither increase propulsion nor reduce resistance (except perhaps to a degree in backstroke). For the arm recovery in these strokes then, the technique considerations should therefore be doing these movements with maximum relaxation to conserve energy for the propulsive phase, and to get the arms in the optimal position to best commence propulsion in the pull.

When you read or hear of a technique tip, it is useful to ask yourself how, apart from the exceptions mentioned above, this aspect of technique either helps increase propulsion or decrease resistance. If it does neither, then you can justifiably question its value and whether it is purely cosmetic.

Therefore as well as concentrating on correct movement patterns, it is useful to focus on what you are trying to achieve in general terms, i.e. maximising propulsion and/or minimising resistance. With respect to maximising propulsion for example, rather than thinking only about the path your arms and/or hands take during the pull phase, just be aware of the feel of the water on your palms and forearms and try and maximise the backward pressure you are exerting on the water for the full range of the pull. In other words 'get hold' of the water as early as you can and hold onto it for as long as you can. If you are doing this effectively then the chances are good that you will be executing the correct movement patterns. This particular focus is more relevant for FS, BK and BF, where almost all of your speed results from your pull, unlike BS where the majority of your speed comes from your kick.

With respect to minimising resistance for example, rather than thinking only about your head and body position and other factors that affect the resistance you create, just imagine that you are 'making as small a hole as possible through the water', with your hips and legs being in the 'shadow' of your torso; and executing all your movements as smoothly and efficiently as possible.

In any case, what constitutes the best technique for any swimmer in any stroke is an extremely complex question involving many variables. A very significant variable is flexibility or range of motion in the shoulders, the spine and, for breaststrokers in particular, the hips, knees and ankles. Other variables include limb length, strength, coordination and natural buoyancy or lack thereof.

Support for the idea that there is no single ideal technique in any stroke can be found in the fact that while they will usually have important basic principles in common, mature elite swimmers demonstrate considerable variance in technique. While all swimmers can certainly learn from their technique, swimmers should take great care in blindly copying all aspects of mature elite swimmers' technique.

There may be a good reason why an experienced, well-trained swimmer performs an aspect of technique a particular way, usually because of or to compensate for a deficiency in another area (e.g. flexibility or strength). Often a well-trained swimmer familiar with the principles underlying good technique and who is encouraged to think about these principles when training, will develop the nuances of technique that are most appropriate for that swimmer given his/her physical characteristics. Depending on the swimmer, it may therefore often be better to trust in this intuitive 'self-development' than to apply guesswork in modifying technique.

There is more scope for divergence from 'ideal' technique in aspects that relate to increasing propulsion (e.g. pull pattern), than those that relate to reducing resistance (e.g. body position).

It may therefore be counter-productive to modify a swimmer's technique to conform to a perceived ideal, especially if the swimmer finds a particular movement pattern difficult to perform. For example, a swimmer with relatively poor shoulder flexibility (as would often be the case with an older adult swimmer) may be able to exert more backward pressure (i.e. generate more propulsion) with a straighter arm pull in freestyle than attempting, with difficulty, to get the wrist and elbow up early and into a position where they can apply little force.

So be your own best coach and focus on maximising propulsion and minimising resistance!

5. TECHNIQUE AND SKILL TRAINING

So how do you incorporate technique and skill improvement into your training?

Firstly it is important to recognise that bringing about a *change* in technique, especially for adult swimmers who may have swum the same way for many years, is extremely difficult

and requires great motivation and concentration (from the swimmer) and great perseverance (from the swimmer and coach).

To make a technique correction deemed by your coach or yourself to be desirable, you need to practise it continually every time you swim if you want the change to become permanent. Don't wait for a technique-based set or only practise it when swimming slowly; focus on it all the time and at all speeds. You need to ensure the change becomes part of your natural technique when you are fatigued (as you are for at least some of a race), when your technique is more prone to deteriorate.

I suggest that if bringing about any change becomes too difficult and/or frustrating for a swimmer or coach, and any significant benefit is uncertain anyway, then the change is best ignored, especially if the swimmer is swimming mainly for health and fitness reasons, as we all should be!

Drills *can* assist in learning or changing various aspects of technique, but be aware that doing (often short) distances of a particular drill is not going to magically change your technique; you still need to incorporate the change into your full-stroke technique. Ensure you (and your coach) know *why* you are doing a particular drill, and what aspect of technique the drill is designed to assist with. Also be wary of drills that involve movement patterns that are not a part of the relevant stroke. Why practise something you don't do when you swim the stroke? (When drills first appeared in the late 1970s/early 1980s, I got the impression a virtual competition developed amongst coaches to create as many drills as possible, without any clear idea of what they may be useful for. And I suspect drills named after famous swimmers gained wider acceptance largely due to their name. Perhaps this mentality regarding drills persists to an extent even today). Unless otherwise required, stroke drills should always be done slowly and precisely, and are often better done with fins – especially for adults.

When coaches ask me "How do I get swimmer X to do Y (an aspect of technique)", I reply: "Tell X to do Y". Nothing beats constant focus on what you are trying to achieve or change.

Different visual and verbal cues work for swimmers to varying degrees, so if you hear or see something that strikes a chord with you and seems to really help you improve your technique, efficiency and/or speed (by increasing propulsion or reducing resistance) then recall and apply this cue(s) regularly.

The same approach applies to other skills (i.e. starts, turns and finishes). Swimmers ask me if they can practise turns and I will say they can practise turns at the end of every lap – well, apart from the last lap. Sure you also need to practise turns at race speed if you are a competitor, but whatever speed you are swimming make every turn a technically correct, well-executed turn – they are a joy to do well. The same applies to finishes. Practise some at race speed, but *always* finish into the wall and try and make the adjustments necessary to finish on a full stroke. Starts should be regularly practised, either on their own or in sets of 25s or 50s; and make sure every one is done properly, practising all components from taking up your starting position to surfacing (the 'breakout').

It is easier – even for 'old dogs' – to learn new skills than to change deeply-ingrained aspects of technique, so I suggest that even non-competitive adult swimmers try and learn

some of the more technical ‘competition’ skills, even if only for the challenge and because it’s good for your brain!

Use of video is of course very useful in changing an aspect of technique or learning a new skill, both so the swimmer can actually initially see what they are doing wrong or not doing at all (which can be different to what they think they are doing), and to check the degree to which they are changing an aspect of technique or acquiring the new skill.

I do not discuss the monitoring of stroke rates and stroke counts in training in this Handbook, nor its relevance for speed/pace training, as it is of limited relevance to other than elite competitive swimmers. Suffice to say it is generally advantageous to achieve any given speed with a lower stroke rate or count, as this means a higher level of efficiency and greater conservation of energy.

Every lap you do, every stroke you take is an opportunity to concentrate on any recommended technique change; and swim better, smoother and more efficiently – and therefore faster, if that’s what’s important to you.

6. TRAINING EQUIPMENT AND AIDS

Most swimmers have used, and most swimming coaches have employed, training equipment or aids during their careers, even if only the humble kickboard. In this chapter I will discuss the merits of types of swimming equipment and aids, but confess to not generally being a fan of ‘toys’, as I call them. One needs to remember that the principal reason swimming gear manufacturers market and sell (and regularly ‘upgrade’) equipment is to make more money, not to help swimmers swim faster.

Kickboards

There is no doubt that kickboards are a very useful tool for all swimmers to develop kicking skills and fitness, which of course is of great importance given the kick’s role in maintaining body position and/or creating propulsive force in all four strokes.

I don’t think it matters much what type of kickboard one uses, despite the range of styles available and the various advantages their manufacturers tout them as having. I would suggest swimmers use the board they are most comfortable with. I strongly recommend that swimmers hold the board at the front of the board with forearms on the top of the board for greater control. If doing this or using a board at all causes shoulder or neck pain, swimmers would be better advised to only do kick without a kickboard.

There are various ways of doing kick without a board in each stroke (see *Kicking Drills* for each stroke in Part One, Chapter 7, *Important Aspects of Technique and Teaching Points*). There is an argument that doing kick without a board is preferable because this allows a swimmer to better duplicate the position(s) their body is in while kicking during the relevant stroke. I am inclined to agree, although less so with respect to BS, as doing BS kick with a board pretty closely approximates the swimming position in BS. In any case, I would suggest doing some kick both with and without a board for variety.

Many adult swimmers (and Masters competitors) can find doing BF and FS kick with a board and without fins quite challenging, so it may be best to do most kick in these strokes (and BK) with fins, both with and without a board.

Fins

I am unaware of any reason why using fins while swimming FS, BK and BF directly helps increase a swimmer's speed while doing these strokes without fins, nevertheless I think they can play an important role in any adult or Masters swimming program.

And as with kickboards, I don't think it matters much what type of fins one uses, despite the many styles available and the various advantages their manufacturers tout them as having. I would suggest swimmers use fins that are flexible enough to provide significant propulsion (I don't like the stiffer, hard-rubber ones), and/or ones they feel most comfortable with. I don't know of any 'BS fins' that are of any value.

I think fins are useful for the following reasons:

- They provide good momentum while doing FS, BK and BF stroke drills (see *Stroke Drills* for these strokes in Part One, Chapter 7, *Important Aspects of Technique and Teaching Points*) enabling the swimmer to concentrate on aspects of technique without having to work too hard to maintain speed or a good body position.
- They can be useful in teaching the correct kicking action in FS, BK and BF (i.e. emanating from the hips with minimal knee bend, and with feet just below the surface).
- They make kicking drills easier in FS, BK and BF (see *Kicking Drills* for each stroke in Part One, Chapter 7, *Important Aspects of Technique and Teaching Points*); and therefore more doable and enjoyable, especially for less competent kickers.
- They add all-important variety to a program, and can be used in all types of sets, including speed/pace sets. It's fun to revel in the extra speed they provide!
- They are great for recovery sets.

While I discourage swimmers from using fins all the time (unless they're recovering from injury – or over 80!), if that's what they need to do to keep them swimming, then that's better than not swimming at all, so who am I to tell them not to!

Pull Buoys

Pull buoys are used for 'pulling' (i.e. 'arms only' swimming), and are designed to help increase arm strength because they supposedly prevent a swimmer kicking, thereby increasing the load on the arms. They are almost exclusively used for FS, and sometimes BK. I have the following comments:

- While the more a swimmer kicks while swimming normally the more using a pull buoy will prevent them from kicking, a pull buoy doesn't totally prevent a swimmer kicking; and to the extent that it does I am far from convinced any extra load on the arms is sufficient to produce any real strength increase.
- Pull buoys can be used in conjunction with a band, or inflated inner tube or other method of binding the ankles together, and while these methods almost completely

prevent kicking, they do not dispel my other reservations, even though binding the ankles together is probably the best way to do pulling with a pull buoy.

- I know from personal and coaching experience that the main effect of a pull buoy is to float up a swimmer's hips (and legs) and make swimming easier by improving body position, except perhaps when swimming fast over a short distance. This is even more the case for adult swimmers, because a swimmer's leg strength and kick tend to deteriorate, and hence body position tends to lower, as they age.
- I firmly believe that any swimming equipment or aid, like a pull buoy, that affects a swimmer's body position or otherwise even subtly affects the way a swimmer normally performs the pull (including using the muscles of the torso) is not beneficial for swimming performance.

But if a swimmer likes using a pull buoy because it makes swimming easier, or for whatever other reason and it gets them swimming more, then they should use one. And it doesn't matter what type you buy – they all do the same thing. Find one that's comfortable and doesn't 'pop out' all the time.

Hand Paddles

Like 'pulling', swimming with hand paddles (often done with a pull buoy) is intended to increase arm strength because the paddles add to the water resistance in the pull. They are primarily used in FS, but can be used in all strokes. I have the following comments:

- I am not convinced that the relatively minor increase in resistance from using paddles results in any real strength increase.
- It concerns me that the flat pulling surface of paddles (as opposed to the flexible and changing pulling surface of the palm of the hand and fingers) inhibits and at least subtly changes the movement(s) of the hand and fingers throughout the pull, and is therefore potentially detrimental to the pull and swimmers' feel for the water.
- Perhaps if a swimmer has a point in their stroke where they 'slip' and lose hold of the water, using paddles may highlight where this occurs and assist in rectifying the problem.
- Use of paddles has been associated with increased risk of shoulder injuries.
- As with other equipment, I don't think it matters much what type of paddles one uses, despite the many styles available and the various advantages their manufacturers tout them as having. I would suggest swimmers avoid using paddles that are more than marginally bigger than their hand, because this is 'unnatural', slows hand speed and may increase injury risk. Swimmers should use paddles they feel most comfortable with.

As with all equipment, if you like using paddles and/or feel it benefits you, then trust your judgement and use them (sparingly?).

Snorkels

I confess that I haven't used (front) snorkels as a swimmer or coach, so am inexperienced as to their use or value. My uninformed view is that while using them may allow a swimmer to concentrate on their arm stroke or other aspect of technique in FS without having to worry about turning to breathe, ultimately breathing does have to be incorporated into the

stroke, so why not do it all the time? Snorkels can be used while doing various FS or BF kicking drills with or without a board, meaning you can keep your head down, which is good.

They are also useful if you have neck or shoulder problems that make the FS breathing action difficult or painful.

If you like your snorkel and it gets you in the pool, use it!

Other Resistance Equipment

Over the years there have been many types of equipment designed to increase frontal resistance/drag while swimming and/or slow a swimmer's swimming speed in order to slow the arm stroke and pull and hence supposedly improve arm strength. Swimmers have done tethered swimming using harnesses and rubber cord; attached devices to their body like 'scoops' to catch the water; towed water-catching cones or bags or, more recently, sponges. The fact that none of these aids seem to remain in common use for long no doubt says something about their efficacy.

As with the use of pull buoys and paddles, I am at least dubious about any potential strength gains from all these aids; and am very concerned about the effect they may have on a swimmer's body position and how they even subtly affect the way a swimmer normally performs the pull (including using the muscles of the torso).

I don't believe these aids are meaningfully beneficial to swimming performance, but if you like using them, they are probably not going to do you any harm, unless you overdo it.

Other Aids

Other equipment and aids purporting to help with swimming speed or some aspect of technique have come and (mostly) gone, and I haven't seen one that has had wide and continued support in the coaching community. Some coaches still use 'speed-assisted' swimming using a tether, but I am predictably doubtful about its value, again due to my concerns about potential changes to body position and pull.

For the adult non-competitive swimmer the bottom line is that any piece of equipment or aid that you enjoy using or helps you do more swimming and be fitter and healthier is good, so go ahead and use it. And for Masters competitors I would say most aids are of at least doubtful value in helping you swim faster, especially for older competitors, but use them if you like. As an adult/Masters coach I give sets that use kickboards and/or fins, and allow swimmers to use other items of equipment (e.g. pullbuoys, hand paddles and snorkels) if they like and as appropriate.

By far the main thing that helps you swim better and faster is…surprise, surprise…just swimming!

7. IMPORTANT ASPECTS OF TECHNIQUE AND TEACHING POINTS

Introduction

This section sets out aspects of technique and teaching points that I, and other experienced coaches I have worked with, believe are important. These important aspects of technique and teaching points cover each of the four strokes; individual medley turns; dive start; underwater kick and relay start.

This section is not intended to be a complete list of every desirable aspect of technique in each stroke and skill, as more comprehensive information can be found in other resources, along with varying methods of teaching all aspects of technique. It is intended as a reference source for swimmers and coaches. In my experience, while these aspects of technique are most important while learning to swim, many of them need to be reinforced throughout swimmers' careers, including as adult swimmers and Masters competitors.

The important aspects of technique and teaching points for each stroke are divided into sections as follows: Head/Body Position, Arm Stroke, Kick, Timing, Breathing, Start, Turn, Finish, Stroke Drills and Kicking Drills. The important aspects of technique and teaching points for individual medley turns, dive start, underwater kick and relay start are similarly divided into sections.

I have only included the basic stroke and kicking drills that I use regularly. Others may be useful according to personal preference. Stroke and kicking drills in FS, BK and BF (and BS pull) are often best done with fins by adult swimmers, especially older and less proficient swimmers.

Freestyle

HEAD/BODY POSITION

- Water level at top of head; head still (except during breathing) with eyes looking straight down
- Body high and flat, with head, hips and heels at surface; hips and legs in 'shadow' of torso; and body making smallest possible hole through water
- Rotation of torso (shoulders and hips) around central axis to increase arm extension, minimise resistance and facilitate breathing

ARM STROKE

- Relaxed, narrow, high-elbow recovery with fingers pointing down
- Shoulder width hand entry, with fingertips entering first
- Extension to just short of elbow lock
- Shoulder, elbow and wrist up for 'catch'; with wrist higher than fingers and elbow higher than wrist
- Elbow bent as hand comes in under body, but not across centre line
- Pull finishes with hand past hips and thumb brushing thigh
- Feel water on palm of hand, and maximise continuous backward pressure and acceleration through full range of stroke

KICK

- Legs straight with toes pointed
- Kick from hips with minimal knee bend
- Small, shallow continuous kick, with feet just below surface
- Role in maintaining good body position

TIMING

- Smooth progression from stroke to stroke, with small pause at arm extension
- Kick coordinated with pull, with four or six kicks per two-stroke cycle

BREATHING

- Smooth, minimal turn of head sufficient for mouth to be above water level or behind head's bow wave
- Inhale through mouth and exhale underwater through mouth and nose
- Bilateral breathing recommended for balance and symmetry
- Minimal breathing in 50-metre races, after start, before and after turns, and at finish

START (See Dive Start)

TURN

- Maintain speed into turn
- Use either arm for final stroke
- Use ledge, join of wall and bottom, or 'T' on bottom to judge when to begin turn
- No breath on at least final stroke before turn
- Submerge body starting at head after last stroke with head/eyes down
- Forward roll with chin on chest and tucking knees to chest
- Commence opening out as feet hit waterline
- Feet hit wall together at or just below surface, with body in 'chair' position i.e. facing up with knees and hips at 90 degrees and arms in streamline position
- Push off immediately and rotate onto front
- As pushoff speed begins to drop commence underwater kick (see *Underwater Kick*), and execute breakout (see *Breakout* under *Dive Start*)

FINISH

- Maintain speed into finish
- Use either arm for final stroke
- Adjust stroke approaching wall to finish on full stroke, touching fingertips first at full extension with eyes down and opposite shoulder up
- No breathing for final five metres or more

STROKE DRILLS

- Single arm (with other arm extended and breathing on side of arm being used, or other arm by side and breathing on side of arm by side)
- Catch-up (with kick between each stroke)
- 6-3-6 (i.e. six kicks on side, three strokes, six kicks on other side) and variations
- Finger tip drag (can also be done with single arm and catch-up)
- Fist (i.e. with closed fists)

KICKING DRILLS

- Using kickboard (with hands on front of board and with head up, or with head down using snorkel)
- On side (with one arm extended, other arm at side, and changing sides)
- Streamline (on surface with arms extended in streamline position and lifting head to breathe as required, or using snorkel)
- Sculling (with arms extended, head up and hands sculling)
- Prone (with arms at side or crossed on chest with rotation for breathing or using snorkel)

Backstroke

HEAD/BODY POSITION

- Head back, eyes looking straight up
- Body high and flat, with head, hips and heels at surface; hips and legs in 'shadow' of torso; and body making smallest possible hole through water
- Rotation of torso (shoulders and hips) around central axis to increase arm extension and minimise resistance

ARM STROKE

- Relaxed, straight-arm recovery leading with shoulder, with back of hand facing up
- Entry with arm straight, elbow locked, hand pitched outwards, palm facing down and back, and little finger/outside of hand entering water first
- Pull down and back at 'catch' to elbow bend
- Pull finishes with hand past hips and thumb brushing thigh
- Feel water on palm of hand, and maximise continuous backward pressure and acceleration through full range of stroke

KICK

- Legs straight with toes pointed
- Kick from hips with minimal knee bend
- Small, shallow continuous kick with feet just below surface
- Role in maintaining good body position

TIMING

- Smooth progression from stroke to stroke
- One arm at catch as other arm finishes pull
- Kick coordinated with pull with six kicks per two-stroke cycle

BREATHING

- Inhale through mouth and nose on one arm stroke and exhale through mouth on other arm stroke

START

Starting Position

- With ledge: ledge usually set at water level, but height may depend on body type, leg length and strength, and comfort
- With ledge: feet shoulder-width apart, with balls of feet on ledge and toes resting on top of ledge
- Without ledge: feet shoulder-width apart, with balls of feet and toes on wall at water level, one foot slightly higher than other
- Hands hold bar at shoulder width. Choice of horizontal or vertical bar depends on body type/size, strength and comfort
- On 'take your mark' pull up so knees at 90 degree bend, with back straight and leaning slightly to far end of pool

Leaving Block, Flight and Entry

- At starting signal thrust up and back with legs, leading with head and arching back; simultaneously releasing bar, bending elbows and moving into streamline position
- Entry with finger tips first in streamline position with body following through same entry hole at optimal entry angle to maintain speed

Underwater Kick/Breakout

- As start speed begins to drop commence underwater kick (see *Underwater Kick*), and execute breakout (see *Breakout* under *Dive Start*)

TURN

- Maintain speed into turn
- Use either arm for final stroke
- Use stroke counting from flags to determine when to roll over
- After final stroke on back, bring following arm up and across body to facilitate roll and take final stroke on front
- *Rule: Roll and final stroke on front must be continuous, with no kicking unless it's part of the continuous turning action*
- Submerge body starting at head after last stroke with head/eyes down
- Forward roll with chin on chest and tucking knees to chest
- Commence opening out as feet hit waterline
- Feet hit wall together at or just below surface, with body in 'chair' position i.e. facing up with knees and hips at 90 degrees and arms in streamline position
- Push off immediately on back
- As pushoff speed begins to drop commence underwater kick (see *Underwater Kick*), and execute breakout (see *Breakout* under *Dive Start*)

FINISH

- Maintain speed into finish
- Use either arm for final stroke
- Use stroke counting from flags to facilitate finishing on full stroke, touching fingertips first at full extension

STROKE DRILLS

- Single arm (with other arm by side)
- 6-3-6 (i.e. six kicks on side in rotated position, three strokes, six kicks on other side) and variations
- Double arm (with backstroke kick)
- Fist (i.e. with closed fists)

KICKING DRILLS

- Streamline
- One arm above head while in rotated position (and changing arms)
- Arms at side (can be done with rotation)
- Rotation (with half/180 degrees or full/360 degrees rotation to alternate sides)
- Holding kickboard over knees

Breaststroke

HEAD/BODY POSITION

- Minimal head movement independent of shoulder movement
- Body high and flat at full extension, with head face down between arms
- Hips up (apart from slight drop during breathing), with body making smallest possible hole through water

ARM STROKE

- Begins in streamline position, with head face down, arms fully extended and thumbs together
- Catch with palms outward
- Outsweep to elbows up in front of shoulders
- Inward scull/forearm press, bringing elbows in and together, all in front of shoulders
- Feel water on palm of hand, and maximise backward pressure and acceleration, through propulsive phase of stroke
- Drive hands forward at surface
- Speed of movement throughout pull

KICK

- Main propulsive force
- Draw heels up to buttocks (not knees forward) and turn feet out
- Catch water on instep of feet and inside of ankles
- Narrow kick in an ‘arc’ pushing water backwards as much as possible, finishing with feet together and toes pointed

TIMING

- Draw heels up to buttocks during inward scull, ready to ‘kick hands forward’
- No pause after inward scull
- Variable pause at streamline depending on distance and stage of race
- Smooth, flowing, undulating rhythm

BREATHING

- Inhale through mouth during inward scull as shoulders rise
- Exhale through mouth and nose as hands drive forward and head returns to streamline position

START (See Dive Start)

PULLOUT

- Begins submerged in streamline position, with head down, arms fully extended and thumbs together
- When body begins to slow from dive or push-off, execute one butterfly kick
- When body begins to slow from butterfly kick, execute double-arm pull with elbows up and hands coming under body and finishing past hips
- When body begins to slow from pull, bring hands up close to body with elbows close to ribs and kick to surface, finishing in streamline position for breakout (see *Breakout* under *Dive Start*)
- *Rule: Head must break surface before hands turn inward at widest point of the first stroke at surface*

TURN

- Maintain speed into turn
- Adjust stroke approaching wall to turn on full stroke
- Touch simultaneously with fingertips of both hands at full extension, with head down
- Allow slight flexion at elbows, and immediately pull one arm away under water with elbow bent while tucking legs under body to place feet on wall
- Simultaneously head comes up for breath while facing top of wall
- Other arm comes out above water with elbow bent as bottom shoulder turns down
- Bob down on side to push-off position with hand of trailing arm entering water behind head to facilitate side-on position
- Push off in streamline position, rotate onto front, and execute pullout (see *Pullout* above) and breakout (see *Breakout* under *Dive Start*)

FINISH

- Maintain speed into finish
- Adjust stroke approaching wall to finish on full stroke
- Touch simultaneously with fingertips of both hands at full extension and head down

STROKE DRILLS/PULL

- Two kicks, one pull
- Three-second glide and variations, (e.g. alternating three, two, one-second glide)
- Two pulls, one kick (for more advanced swimmers)
- Pull (done with pullbuoy, or with fins doing one butterfly kick per stroke or continuous freestyle kick)

KICKING DRILLS

- Using kickboard (with hands on front of board, and with head up or with head down using snorkel)

- On front (with arms extended and thumbs locked together)
- On front (with hands on backs of thighs)
- On back (with arms in streamline position and keeping knees in water)

Butterfly

HEAD/BODY POSITION

- Minimal head movement, except for head leading shoulders down prior to arm entry and for breathing
- Despite need for some undulation, body should be high and flat with hips up, and body making smallest possible hole through water

ARM STROKE

- Relaxed, swinging recovery with arms straight; and back of hands leading with thumbs down
- Hands enter at shoulder width, with fingertips entering first
- Extension to just short of elbow lock
- Shoulder, elbow and wrist up for 'catch'; with wrist higher than fingers and elbow higher than wrist
- Elbows bent as hands come together under body
- Pull finishes with hands past hips and thumbs brushing thighs
- Feel water on palm of hand, and maximise backward pressure and acceleration through full range of stroke

KICK

- Legs straight, feet together with toes pointed
- Kick results from continuous undulating wave beginning in upper body and passing through hips, knees and ankles; with hips rising during downbeat and dropping slightly during upbeat
- Minimal knee bend
- More propulsion from second kick (during second half of pull) than first kick
- More propulsion from downbeat than upbeat

TIMING

- Two kicks per stroke cycle
- Downbeat of first kick below surface as arms enter and hips rise, helping push head and shoulders down under water
- Downbeat of second kick (main propulsive kick) with feet at surface, during second half of pull as hands pass hips
- Smooth, flowing, undulating rhythm

BREATHING

- Inhale through mouth as hands come under body and shoulders rise
- Exhale underwater through mouth and nose on downbeat of first kick
- Extend neck/chin forward to get mouth above surface rather than lift head
- Breathing every stroke or second stroke depending on race distance
- Minimal breathing for 50-metre races, after start, before and after turns, and at finish

START (See Dive Start)

TURN

- Maintain speed into turn
- Adjust stroke approaching wall to turn on full stroke
- Touch simultaneously with fingertips of both hands at full extension, with head down
- Allow slight flexion at elbows, and immediately pull one arm away under water with elbow bent while tucking legs under body to place feet on wall
- Simultaneously head comes up for breath while facing top of wall
- Other arm comes out above water with elbow bent as bottom shoulder turns down
- Bob down on side to push-off position with hand of trailing arm entering water behind head to facilitate side-on position
- Push off in streamline position, rotate onto front, and execute underwater kick (see *Underwater Kick*) and breakout (see *Breakout* under *Dive Start*)

FINISH

- Maintain speed into finish
- Adjust stroke approaching wall to finish on full stroke
- Touch simultaneously with fingertips of both hands at full extension, with head down
- No breathing for final five metres or more

STROKE DRILLS

- Single arm (with other arm extended and breathing to side every stroke)
- 3-3-3 (i.e. three strokes with one arm, three with other arm, three with both arms) and variations

KICKING DRILLS

- Using kickboard (with hands on front of board and with head up, or with head down using snorkel)
- On back (in streamline position)
- On side (with one arm extended, other arm at side, and changing sides)
- Streamline (with arms extended in streamline position and lifting head to breathe as required, or using snorkel)
- Underwater (fully submerged, with hands in streamline position or at side, with or without snorkel)

Dive Start

STARTING POSITION

- Kicker position set according to body size, leg length and comfort
- Dominant leg back or otherwise depending on comfort
- Feet at shoulder width and parallel, with knees forward
- Toes of front foot curled over front of block
- Back foot with ball of foot halfway up kicker
- Hands grabbing outside front edge of block with fingers and thumbs
- Head centred, with eyes looking down face of wall

- Back straight and at 90 degrees to back thigh, with hips above head
- Even weight distribution

LEAVING BLOCK, FLIGHT AND ENTRY

- Use hips to thrust with back leg, while simultaneously pushing against block with hands and staying firm on front leg, to achieve immediate horizontal velocity
- Thrust with front leg when weight transfers above it
- Bring arms up under torso and into streamline position
- Keep head still and above arms
- Maintain horizontal body position during flight
- Bring legs up slightly and drop head between arms prior to entry
- Entry fingertips first in streamline position with body following through same entry hole

UNDERWATER KICK/ PULLOUT

- For freestyle and butterfly start execute underwater kick (see *Underwater Kick*)
- For breaststroke start execute pullout (see *Pullout* under *Breaststroke*)

BREAKOUT

- Come to surface at swimming speed in streamline position (see *General* under *Underwater Kick*) with small angle between body and surface and minimal resistance
- In butterfly, backstroke and freestyle, time first pull so that head breaks surface during propulsive phase, and first recovery can occur immediately at surface
- In breaststroke time first pull so that head breaks surface before hands turn inward at widest point of the first stroke at surface (see *Rule* in *Pullout* under *Breaststroke*)

Individual Medley Turns

BUTTERFLY TO BACKSTROKE TURN

- Maintain speed into turn
- Adjust stroke approaching wall to turn on full stroke
- Touch simultaneously with fingertips of both hands at full extension, with head down
- Allow slight flexion at elbows, and immediately pull one arm away under water with elbow bent while tucking legs under body to place feet on wall
- Simultaneously head comes up for breath while facing top of wall
- Other arm comes out above water with elbow bent as bottom shoulder turns down
- Bob down on side to push-off position with hand of trailing arm entering water behind head to facilitate side-on position
- Push off in streamline position, rotate onto back and execute underwater kick (see *Underwater Kick*) and breakout (see *Breakout* under *Dive Start*)

BACKSTROKE TO BREASTSTROKE TURN

- Maintain speed into turn
- Use either arm for final stroke
- Use stroke counting from flags to determine which stroke is final stroke
- *Rule: When hand touches wall body must be facing up (i.e not rotated further than 90 degrees from horizontal)*
- Shoulder, elbow and armpit face up on side of arm touching wall

- After touch, turn to same side chest is facing, tuck head in a downward motion as in a backstroke turn and place feet on the wall with the same body orientation
- For novice swimmers the turn is done more on side; for accomplished swimmers turn is more direct and over top.
- For novice swimmers feet may face sideways on wall; for accomplished swimmers feet may point up on wall
- Push off in streamline position, rotate onto front, and execute pullout (see *Pullout* under *Breaststroke*) and breakout (see *Breakout* under *Dive Start*)

BREASTSTROKE TO FREESTYLE TURN

- Maintain speed into turn
- Adjust stroke approaching wall to turn on full stroke
- Touch simultaneously with fingertips of both hands at full extension, with head down
- Allow slight flexion at elbows, and immediately pull one arm away under water with elbow bent while tucking legs under body to place feet on wall
- Simultaneously head comes up for breath while facing top of wall
- Other arm comes out above water with elbow bent as bottom shoulder turns down
- Bob down on side to push-off position with hand of trailing arm entering water behind head to facilitate side-on position
- Push off in streamline position, rotate onto front, and execute underwater kick (see *Underwater Kick*) and breakout (see *Breakout* under *Dive Start*)

Underwater Kick

GENERAL

- In FS, BK and BF events underwater kick is done from entry to breakout on dive starts and from push-off to breakout on turns
- *Rule: Head must break surface within 15 metres from wall*
- Underwater kick is done because entry speed on start (including BK start), and to a lesser extent, push-off speed on turns is faster than swimming speed, and underwater kick can, depending on the variables below, maintain speed above swimming speed for some distance
- How far a swimmer can remain above swimming speed depends on a swimmer's skill at executing underwater kick; whether it is a start or a turn; and the stage of the race and hence fatigue level; therefore a significant skill is learning how far (and/or how many kicks) one can remain above swimming speed in different circumstances. Many (especially older) swimmers will not benefit from more than a small number – if any – of underwater kicks

TECHNIQUE

- Underwater kick is done as BF kick in streamline position
- The kick is a continuous undulating wave commencing in the upper body and progressing down through hips, knees and ankles, with arms, head and shoulders remaining still
- Minimal knee bend
- Most power generated through hips and abdominal core
- Propulsion from upbeat as well as downbeat

- Kick executed halfway between surface and bottom of pool to reduce retarding effect of kick turbulence hitting surface or bottom of pool

Relay Start

GENERAL

- *Rule: Feet or foot of departing swimmer must be in contact with block when incoming swimmer touches wall*
- Type of relay changeover used depends on skill level of swimmer and each type should be mastered before progressing to next.
- In each type a significant skill is learning when to initiate movement to result in legal but advantageous changeover
- While legality of changeover is responsibility of departing swimmer, incoming swimmer should make this as easy as possible by finishing fast and on full stroke

NOVICE

- Two feet over edge, knees bent, arms back, back straight and leaning slightly forward
- Swing arms through past knees in an upwards motion into streamline position

INTERMEDIATE

- Use standard track start feet position with arms back, back straight and leaning slightly forward
- Swing arms through past the knees in an upwards motion into streamline position

ACCOMPLISHED

- One foot on the kicker, one foot behind the kicker, then stepping back foot to front of blocks, keeping body low and swinging arms through past knees in an upwards motion into streamline position

LEAVING BLOCK, FLIGHT, ENTRY, UNDERWATER KICK/PULLOUT AND BREAKOUT

- See relevant sections under *Dive Start*

8. COACHING GUIDELINES

General

- More so than for younger swimmers, a big reason why adult swimmers and Masters competitors swim in a squad is for social reasons. So coaches should interact with swimmers, and foster an environment where the swimmers interact with each other. Greet and farewell your swimmers warmly and ask questions about and discuss with them aspects of their lives outside the pool. Get to know them!
- Aside from imparting swimming information and actually coaching, while on deck (e.g. between sets or repetitions) be friendly and communicative. Be a bit of a joker or clown if that comes naturally, tell a swimming story or just try to be entertaining in some way. Swimmers of all ages appreciate this!
- As you would with swimmers of all ages, if you are correcting a swimmer or teaching them a new skill do it nicely and calmly without causing any offence. Be understanding

of their inability to make any suggested correction or learn a new skill and know when to back off and forget about it. Be guided by their desire to make the change or learn the skill.

- Older and younger swimmers alike appreciate compliments and positive feedback where deserved and appropriate. Look for opportunities to give them!
- Politely enforce the rule that swimmers should not talk while you are talking, as this interferes with your coaching. I have always insisted on this whether swimmers are eight or 80 – it is a matter of courtesy. I say that listening to me is the only thing in my program that is compulsory!
- Always bear in mind that the most important thing is that it is just good that each swimmer is there swimming rather than being inactive! Remind them of this!

Structure, Program and Sets

- If you have a significant number of swimmers who come more than once per week to particular sessions, consider having a weekly structure to the different type(s) of training or sets offered at these sessions.
- If a weekly structure of different training types is not appropriate given the frequency or randomness of attendance of your swimmers, offer a variety of sets to challenge your swimmers and keep them interested.
- Consider the idea of having a rotating 'stroke of the week' as I do. This means that I offer a short technique-based or skill set in that stroke, sometimes using kicking and/or stroke drills, after the warm-up for the entire week (I like the whole squad doing at least one set all together with an easy – or no – time cycle) and perhaps offering some of that stroke in the main set, which would normally be predominantly FS, or in a subsequent set. But see second last bullet point.
- Have each program planned before the session, but be prepared to adjust your program depending on who turns up for that session and what their swimming priorities are. Be prepared and organised!
- Use a whiteboard for your programs if possible; and especially as many adult squad swimmers don't have a competitive or squad training background, give clear, precise and consistent written and verbal instructions regarding your program, sets and technique.
- Have swimmers of similar abilities swim in the same lane where possible, and employ the various methods of catering for the sometimes wide range of swimmers' abilities in a session, e.g. have different lanes/swimmers swimming sets on different time cycles with a different number of repetitions as required; or have different lanes/swimmers swim different distances on the same time cycle as the fastest lane/swimmers.
- Have a specified time after the starting time for warm-up (e.g. 10 minutes) or set a maximum distance whereby everyone stops when the fastest swimmers have completed that distance. Don't have the faster swimmers wait for too long after warm-up or any set.
- Be aware and understanding of the different levels of physical effort swimmers are prepared to put, and physically capable of putting, into their swimming. Nevertheless give swimmers opportunities to exert themselves if they are feeling up to it, and judiciously challenge and encourage them to do so where appropriate.
- Be flexible within the basic structure of your program and sets. Don't insist on swimmers doing strokes they do not want to do or are not capable of doing; and allow

swimmers to use equipment if they choose and if it doesn't interfere with other swimmers.
- Do some fun sets and activities (e.g. relays) and games on special occasions.

9. LAP IT UP!

When an adult swimmer in my squad reappears after a lengthy unexplained absence, I light-heartedly ask: "So was it illness/injury, work/family or laziness?" After a bit of deliberation, all too often the answer is the third reason. All of us, including me, are familiar with the scenario where you get a bit slack and you miss one, then two, then three swims and it snowballs. Even when one of the first two reasons above applies, it can rapidly become the third reason as we tell ourselves: I'll start my routine again next week…then next month…and on it goes. And of course the longer you leave it the more you know you probably won't feel great when you return, having lost some fitness, so the less inclined you are to swim and so the vicious cycle continues.

If you are sick or injured naturally you should spend the time out of the water recommended by your doctor or physiotherapist, although depending on the injury you may be able to swim using fins or doing kick only. And of course work and family commitments are more important and should take priority over your swimming, although many of us could juggle things so that work/family doesn't have the impact it does on our swimming routine. It is all too easy to use these things as excuses when they really needn't be.

Your swimming, and any other exercise, *should* enjoy relatively high priority in your life given its significant role in your health and wellbeing; it's part of what makes you the best partner, parent, friend, employee you can be because it helps keep you feeling physically good and mentally alert. And if you are stressed or grieving or otherwise suffering from poor mental health, swimming and exercise is scientifically proven to be of great value in offering relief.

There is no magic answer to maintaining your swimming routine, we all have different levels of self-discipline and will succumb to lapses on occasions, but at least have a plan of when you will swim and be resolute in sticking to it unless there is a very good reason not to. Masters competitors should use upcoming meets or other competition goals to maintain attendance, and even usual non-competitors could consider having some goal (e.g. completing a particular open water swim; doing a particular time for a particular distance in training; or doing a certain training distance in a month or week) to assist in their motivation. Whatever works for you in helping you get to the pool and swim more often is good, so lap it up!

PART TWO – MASTERS COMPETITION

1. MEET PREPARATION

The extent to which you prepare for a meet depends firstly on the priority you give to your performance at meets in general, and secondly on the significance of any particular meet compared with other meets. Is the meet a World, Australian or State Chps you have been particularly preparing for and/or is your major meet of the year or season? So most of what I say below assumes that you do give at least reasonable priority to your meet performance, and the meet in question is at least a significant one in your competition calendar (your 'target meet').

Training

Ideally you should begin increasing your training load at least six months out from your target meet while also beginning to tailor your training to having a greater focus on the event(s) you want to perform best in at your target meet. Be more disciplined in your application to your training schedule and use your target meet to increase your motivation to do so.

Taper

The extent to which you taper (i.e. reduce the volume and intensity of your training) in the lead-up to your target meet depends on a variety of factors:

Firstly it depends on the volume and intensity of your training in the previous year or months prior to the meet. Broadly speaking, the more training you have done in the lead-up, the more you can afford to (and will benefit from) the reduction in volume and intensity.

Secondly your taper depends on what your main events are. Again, broadly speaking the longer your main events are the less you should reduce volume and intensity, in order to maintain higher levels of aerobic fitness. In my experience swimmers tend to underestimate the durability of their aerobic fitness – if you have a good background of swimming regularly this will stand you in good stead for a good period and your aerobic fitness will not dissipate quickly.

Thirdly your taper depends on your previous experiences of tapering for a meet and what you believe makes you feel good come meet time. We are all different in this regard independent of the first two factors, so at least to some extent I would recommend trusting your instincts.

And your age should be added to the mix too, as I am inclined to think that the older you get the more rest and recovery you need and therefore the more you should taper even if you have done quite modest amounts of swimming in your preparation for your target meet. My golden rule for tapering as a swimmer and coach has always been: "If in doubt, do less". You can't get fitter in the last couple of weeks, but you can get fresher and faster!

In terms of *how* you should train during your taper, here are some basic guidelines:

- Do your aerobic training at lower speeds and intensity.
- Strive for better 'quality' in your speed/pace training, with a particular focus on practising pace judgement (see Part Two, Chapter 5, *Pace Judgement*)
- Increase your practice of race skills (dives, turns etc.) done at race speed.
- Progressively decrease the volume of all types of training.
- If you don't feel great in any session, just swim easy, or get out!

Other

Depending on how serious you are about performance, you may want to consider making other changes out of the pool during your taper, if these changes will contribute positively to your physical and mental wellbeing and hence your performance. Here are some suggestions:

- Ensure you get adequate sleep.
- Take extra care with your diet so that your body is better fuelled for optimal performance.
- Consider abstaining from, or reducing your intake of, alcohol (or other unhealthy substances).
- Refrain from engaging in physical activities that will cause significant fatigue or involve a significant injury risk.

Aside from any physical benefits of doing any or all of the above, there is also a psychological benefit from knowing you have taken extra care or made a little sacrifice(s) in the interest of optimal performance.

Speaking of things psychological, both in and out of the water during your taper you can mentally rehearse your races by visualising yourself from internally or externally performing the race or parts of the race, with the technique, pacing and general feel you want. 'Record the video' so that when you race you just have to hit 'play'!

2. WHAT TO DO AT A MEET

Masters competitors have different reasons for attending and competing in meets; and where swimming performance rates as a priority varies considerably, although I'm sure everyone would rather swim faster than slower!

Whether you are a serious competitor or not, here are my guidelines for what you should do at a meet:

Have Fun

Fun is one of the three ingredients of the 'Fitness, Friendship and Fun' Masters Swimming Australia motto, and hopefully one of the main reasons you are involved in Masters swimming and competing at a meet is because it is fun, for whatever reason. So have fun!

Having fun and swimming well aren't mutually exclusive, in fact most swimmers will have more fun if they swim well, so if swimming fast adds to your fun, then do the things you should to swim as fast as you can.

Also have fun by appreciating all the other aspects of swimming in a meet namely:

- Take the time to meet and talk to other competitors, and find out their story. You all have at least one thing in common! You may start up a new friendship…or more, so socialise! Ask other swimmers how they swam, and when another swimmer asks you how you performed, don't go into too much detail in your response. Just tell them your time and/or placing and perhaps whether or not you were pleased with your swim.
- If the meet requires competitors to do timekeeping, ensure you do your fair share, and talk to the other timekeepers.
- Take the opportunity to see the sights in and around the town or city of the meet venue, especially if you have never been there before.

Be Organised

Plan in advance and be organised:

- Ensure you know where the pool is, how long it takes to get to and from the pool to where you are staying and how you are going to get there.
- Ensure you know what heat you are in for each event, and, as far as possible, roughly when you will be swimming so you can plan when to arrive at the pool.
- Plan to arrive at the pool in plenty of time to warm-up and do whatever else you need to do prior to competing. Factor in a margin of error.
- Check before leaving for the pool you have all the necessary swimming gear (including spares e.g. goggles) and food and/or drink – everything you need to avoid dramas and to swim at your best.
- Be alert for marshaling calls and get to the marshaling area on time.

Routines: Sleeping, Eating, Drinking and Staying Active

Stick to your usual routines with respect to sleeping, eating, drinking, and whatever else is part of your normal pre-race preparation. Some more specific guidelines are below:

- Without interfering with your socialising of course, ensure you get good sleep during the meet.
- Eat sensibly and healthily throughout the meet, sticking to foods you are used to and avoiding foods likely to upset your stomach.
- Eat healthy snacks when necessary at the pool; while you don't want to be too hungry when you compete, it is probably better to have an emptier rather than a fuller stomach when you race.
- Stay well hydrated at the pool. Water will do; no need to waste money on sugary so-called 'Sports' drinks.
- While waiting at the pool for your race, don't sit down and stay inactive for long periods; regularly get up and have a walk or stretch.

Warm-up/Swim-down

See Part Two, Chapter 3, *Warm-Up and Swim-Down Guidelines*

Racing

See Part Two, Chapter 4, *Pre-Race and Race Tips*

In summary, rejoice in the fact you are doing very good things for your body, mind and general wellbeing by just competing at the meet.

3. WARM-UP AND SWIM-DOWN GUIDELINES

General

- It is important to do some form of warm-up to perform at your best, preferably within an hour or so of your race.
- It is probably more important to warm-up for shorter events (i.e. 25s and 50s), where you need to be swimming fast from the start, than for longer events.
- If you like to warm-up when you get to the pool and it is still a long time before you swim, or the program is taking longer than expected, you can always get back in and do a shorter secondary warm-up, if facilities permit.
- Some suggestions for warm-up content are listed below (see *Initial Warm-Up* and *Secondary Warm-Up*).
- Ideally you should 'swim down' after races, especially if you have another race that day. Some suggestions for swim-down content are listed below (see *Swim-Down*).

Initial Warm-up

- The initial warm-up should be done either when you first get to the pool or, if it is to be your only warm-up, no more than one hour before your race. It can total up to one km or even more, depending on your proficiency, age and what you are used to doing.
- The first item should be a longer easy swim of up to 400 of mostly FS with some of the other strokes as desired.
- The second item should include some slightly faster or pace work in your race stroke all done with good rest. The pace work should/could include some 25s or 50s at the speed you intend to begin your race.
- You can include some stroke or kicking drills if you like.
- Do 2 or 3 race-pace turns and 2 or 3 dive or BK starts as applicable. Especially if your race is a 25 or 50, one (or more) of the starts can be used to do a fast 25.
- The last item should be another easy swim of 200 or more.
- 'Listen' to your body and do whatever makes you feel good and ready to race.

Secondary Warm-up

- If you have warmed up when you first get to the pool and it is over one hour before you race, or there is a delay, or you simply feel like you want another swim, you can top up your initial warm-up with a secondary warm-up of up to 600 or so.
- The first item should be an easy swim of 200 or so of mostly FS with some of the other strokes as desired.
- The second item should be a smaller set of some faster or pace work as per the initial warm-up.

- The last item should be an easy swim of 200 or more.
- As above, 'listen' to your body and do whatever makes you feel good and ready to race.

Swim-down

- After each race ensure you swim down for up to 600 within 10-20 minutes of completing your race if possible. Swim-downs have physiological and psychological benefits.
- The first item should be an easy swim of at least 200 of mostly FS with some of the other strokes as desired.
- The second item should be a set of shorter repetitions done at faster or increasing speeds, preferably in your race stroke, perhaps alternated with easy repetitions.
- The last item should be an easy swim of 200 or more.
- Again, 'listen' to your body and do whatever makes you feel good.
- Any swim-down is better than none.

4. RACING TIPS

- As you can do throughout your taper, mentally rehearse your races by visualising yourself from internally or externally performing the race or parts of the race, with the technique, pacing and general feel you want. 'Record the video' so that when you race you just have to hit 'play'! This can be done any time right up to the start of your race.
- Be calm and relaxed but active at the pool and in the marshalling area. Do not sit for long periods, get up and have a walk or loosen up at regular intervals.
- Be accepting and resilient. If something adverse happens at the meet that affects everyone (e.g. delays or crowded pools), see this as an advantage in that you won't let it affect you as much as it does others.
- Pace judgement is critical in races of 100 metres or longer. So critical I have included a whole chapter on it (see Part Two, Chapter 5, *Pace Judgement*).
- During your races concentrate solely on *your* pace judgment and skill execution and *do not* be distracted by other swimmers. If your concentration wavers just gently pull it back to what *you* are doing.
- We all like to win or finish as high up as possible, but focus more on the time you swam rather than the place you achieved, and how your time compares with your recent swims and your expectations.
- Be humble in victory or achievement and gracious in defeat or disappointment. Don't take your performance(s) too seriously; you have already 'won' by being fit and healthy and just being there!

5. PACE JUDGEMENT

Racing

Having watched countless thousands of swimming races as a swimmer and coach over more than 50 years, I am absolutely convinced that the single biggest factor in a swimmer swimming as fast as they are capable of in any race is how well they pace their race. Proper pace judgement means swimming any race at (relatively) even speed. In 25s and

50s this generally permits maximum effort from the start, although for some older (or slower) Masters competitors it may be prudent to spend the first 10-15 metres of a 50 building to maximum effort and speed. So what follows is largely applicable to distances of 100 metres and longer.

The justification for swimming at even speed can be summarised in three related reasons: Firstly, with finite energy reserves it makes perfect sense physiologically to ration that energy evenly across the full distance rather than 'empty your tank' before the end, or having to back off during the middle of the race in order to finish strongly. Secondly, if too much energy is expended early, technique and therefore efficiency degrades, further slowing speed. Thirdly, it is psychologically damaging to be turning at the halfway or latter stages of a race knowing that the remainder of the race is going to be a real struggle. This psychological negative can further exacerbate the physical deterioration.

Due to the increasing fatigue in a race, even speed requires gradually increasing effort, so there needs to be sufficient energy reserves to enable this progression of effort. It is instructive to see yourself as having 'gears' that one goes through throughout the race, for example four gears, one for each quarter of a 200 or 400 race. The aim should be to develop an internal 'operating system' that always provides progressive energy expenditure irrespective of your level of fitness or other variables. It isn't hard to do with practice in training and competition! The same principles of progressive energy expenditure also apply to IMs, although this will not result in even speed.

An important way of conserving energy early and rationing energy evenly is swimming the early stages of races with a slower stroke rate, concentrating on executing long, smooth, efficient strokes, and then trying to gradually increase stroke rate. In reality your stroke rate may not increase as fatigue progressively sets in.

Be assured that even 100s require conservation of effort in the first 50! No one can swim a 100 with maximum effort and speed – not even if it takes only 46 seconds! It never ceases to amaze me how many swimmers start out a race too fast in the absurd hope that the basic rules of physiology and biochemistry won't apply to them on that day and/or that other competitors behind them will 'give up'. Swimmers who begin too fast *always* swim slower than they are capable of.

I have heard all the reasons and explanations for 'going out too hard'. Some of the more common ones are:

- "But it felt so easy!" It always does, and needs to – more so than most swimmers think.
- "I'm a sprinter, I need to go out hard". If someone is a sprinter who does not have good natural aeorobic capabilities, there is all the more reason to be very careful about pace judgement; and with good natural speed a reasonable first 50/100 will come with minimal effort anyway.
- "If I go out easy, I can't pick up my speed." This is utter nonsense, and physiologically illogical.
- "If I was going to do time B (a PB, goal time or record), I needed to do a split of time A." If swimming the race optimally (i.e. evenly) produces a split of A, you may be good enough to do time B. If it doesn't then you are not yet good enough to swim time B.
- "But I needed to stay with (or ahead of) swimmer X." (See next page.)

Never, ever pace your race off another swimmer. If you do, what you are in effect saying is: "I don't know how to ration my effort evenly and swim my fastest possible time, so I will trust someone else who may be going out too hard (or easy), or be affected by any number of other variables." There is nothing you can do to affect their performance and nothing they can do to affect yours; and you have to learn how to swim your fastest possible time by yourself. I have heard swimmers say they began a race too hard in an attempt to 'shake off' a close rival, as if their rival would slow down or give up because they are behind in the early stages. What is far more likely is that the rival will be encouraged by the fact that the swimmer who started too fast then slows down, and feel confident of overtaking them.

Some coaches and swimmers (and silly commentators) still believe going out too hard is "being tough" or the swimmer is "giving themselves a chance", when it is in fact being dumb and usually means giving themselves no chance. If a swimmer wins a race after going out too hard, all this means is that they could have won in a faster time if they had swum the race more sensibly.

Yet another good reason to err on the side of going out too easy rather than too hard is that the former 'mistake' will just mean you will finish faster, whereas the latter is uncorrectable unless you stop and have a rest. It is of course possible to go out too easy and/or not put in sufficient progressive effort in the middle stages of races, but I have encountered this far less frequently in my swimming and coaching careers, and it is easier to address. And in open water races with crowded starts there may be a need to swim a little harder than is ideal in the early stages to avoid the problems of being in a large pack of swimmers. If so, you should try and settle into the appropriate rhythm and speed as soon as possible.

For every race there is a fastest possible time you are capable of given your fitness, health and a range of other variables. Your goal should always be to do as close as possible to this optimal time – what more can you do? This is your best chance of winning, breaking a record or achieving whatever it is you want to achieve. And the way to swim this optimal time is *always* to swim your own race and to do it with proper pace judgement.

Training

So how do you train to achieve optimal pace judgement in competition?

In Part One, Chapter 3, *Types Of Training* I have addressed this question in general terms under the heading *Progression*. Under the heading *Speed/Pace* in the same chapter, I mentioned race pace training and the fact that obviously any swimmer needs to do at least some training at speeds at or at least close to those of their race distances. Now I would like to discuss the idea of race pace training in greater depth and suggest a possible subtle, but to my mind significant, variation in approach to this type of training.

Let's begin with an example to illustrate my point: Take swimmer X who swims 2.10 for 200 FS. Because X is smart and swims their races intelligently, when they swim 2.10, their splits for each 50 are: 31, 33, 33, and 33 seconds, which allowing for the dive means they are swimming at pretty much even speed for the entire distance, which requires gradually increasing effort, and will most likely require a gradually increasing stroke rate.

Now to train for their 200 FS coaches (and swimmers) would say X should do sets of 50s at a speed of about 32.5 seconds per 50, X's average speed over the distance, and they are probably right, as such training would have considerable relevance.

But even though that is X's average speed, how that speed felt to X throughout the race, and how it was achieved, almost certainly varied considerably. The 31-second first 50 (roughly the same speed as the other 50s allowing for the dive) felt *very* different (i.e much easier) to the last 50, and correspondingly, but less dramatically, different to the second and third 50s.

Would it not therefore be more appropriate for X to practise the *feeling* of the first 50, 100, 150 of the race (and sometimes the whole 200), irrespective of how fast that is in training when X is not in the same physical or mental state they will be in a race? A swimmer's physiology and brain doesn't know how fast they are going, all they can 'know' is whether or not they are performing in the same way as they do in a race. So isn't rehearsing the same physiological and psychological function (i.e. *feel*) more relevant than X slavishly trying to swim 32+ even if this requires a level of effort and a stroke rate very different to those actually used in the race? Maybe on a good day in training this race feel will result in something very close to race pace, but if X is a swimmer who responds well to the competitive environment, most days it won't.

On a related point, as directed by their coaches, many swimmers these days do a lot of training practising 'back-end speed'. I don't know how a swimmer can properly practise their back-end speed unless it follows the front end done at the same feel, or with the same effort, as when they race. I believe the biggest factor in a swimmer having sufficient back-end speed is ensuring the front end isn't *too bloody fast*!

So what I advocate, and what I would spend a lot of time doing if I was still coaching at the elite level, is swimmers doing sets that practice how they need to *feel* at the 50 (or even 25, 50 and 75) mark of 100 races, 50/100/150 mark of 200 races and 100/200/300 of 400 races. I have devised a range of sets that facilitate this.

One example is: 12 (or 8 or 4 or 16; some multiple of four depending on one's ability and capacity) x 100 on a time cycle that is going to offer sufficient time for full or near full recovery. Each set of four should be done as follows: one as 25 race feel, 75 easy; one as 50 race feel, 50 easy; one as 75 race feel, 25 easy; and one as a race feel 100; with each repetition done in the race stroke, or the race feel section done in the race stroke and the easy part done in any stroke.

One could do a corresponding version of this set over 200s, segmenting each set of four by 50 instead of 25; or even in a set of 400s (tougher!) with 100 segments. These sets can be done with or without a dive, and to more accurately duplicate the race situation, with 'feet-on-the-wall' timing at the end of any race feel section where a turn would normally be done.

Of course the times achieved for each race feel section are relevant, and one would hope they aren't a whole lot slower than those the swimmer would like to achieve in a race, but mostly they will be a little slower. The most relevant aspect of this training is practising the *feel* the swimmer needs to have at each point to ensure they have sufficient energy left for

even speed and therefore optimal performance. What time that feel equates to (both in training and in any race) will vary according to a swimmer's state of preparation, how they are on any given day, and how well they respond to the competitive situation. But it should always *feel* the same.

6. SWIM YOUR BEST

General

This chapter is more relevant for those Masters competitors who take their competition more seriously, for whom performance at a meet takes high priority, and who have the physical capacity and desire to apply high levels of effort in their races.

When I ask Masters competitors after they have swum a race: "How did you go?" or "What time did you do?", I quite often get a reply along the lines of: "Great! I did a PB!" So I then annoy them by saying: "So that is your lifetime PB?", to which they reply: "No of course not, but it's the fastest I've done in a while."

Well folks, sorry to be pedantic and disappoint you, but you only have *one* PB in any event, and that is the fastest time you have ever done in your life. Now some Masters swimmers (particularly those that didn't compete seriously during their physical prime, say, between the ages of about 16-30) are lucky enough to do PBs at Masters meets and can continue to do so for a number of years before the inevitable decline sets in.

So how do you best judge your performances at a meet, given that for almost all of us PBs are a distant memory? Well for starters it is best and most appropriate to primarily compare yourself with yourself. Everyone likes to win or place highly, but you are best served to focus on what times you do at a meet and how good those times are for you. Fortunately it seems that most Masters competitors do this.

But how do you measure how good any time is? Two good ways are to have 'Age Group PBs' and 'Year/Season PBs'. Age Group PBs are the fastest times you have done in any five-year age group. One of the few benefits of getting older is that every five years you go up an age group and have a new set of Age Group PBs, and if you are really fast, a new set of State, Australian and world records, to attack! Age Group PBs are quite an achievement, especially if you do them in the last year or two of your age group.

Year/Season PBs are the fastest times you have done in any year or season. Naturally you should have different sets of Age Group PBs and Year/Season PBs for long course and short course, although the difference between LC and SC PBs tends to diminish as you get older, and turning speed decreases. So keep track of your Age Group PBs and Year/Season PBs and use them as motivation each time you compete.

Or if you are really committed to performance you might like to make a pact with Raceworld…

Raceworld

This section expands on the idea of swimming your best and is somewhat of a personal diversion because it is a concept that is dear to my heart.

During an Australian team training camp I attended, the team did a couple of sessions with a sports psychologist, and during one of these sessions the psychologist asked us all to try and recall what we were thinking prior to and during the swimming race we considered to be our best-ever performance. Almost everyone, including me, remembered little if anything about the performance except for perhaps a general recollection about our state of mind. This prompted in me a developing realisation about a state of mind I would come to refer to as 'Raceworld', the state of mind one is in, or ideally should be in, just prior to and during a competitive experience. My name for it includes the word 'race' because it was inspired by my swimming, and to a lesser extent, track and field careers, but this state of mind can easily be applied, with minor differences, to any sport. These days sportspeople more commonly speak about "being in the zone" during optimal performances, which no doubt means basically the same as being fully immersed in Raceworld. Years before I ever gave it a name, from a young age I had a special appreciation of Raceworld as it applied to all sports in which I participated and what it demanded of an athlete.

Raceworld isn't necessarily or always a pleasant state to be in. It can include feeling anxious, challenged and may include negative thoughts. At its best it involves being in a state of relaxed calm pervaded with a confidence one is ready to perform to the very best of one's ability. Behind the blocks just prior to what was the highest-standard long course swim I ever did I had a particular negative thought that questioned why I believed I could swim the time I wanted to when just a week earlier I had swum four seconds slower than that. The fact I then swum my PB and a world-class time made me realise that at least sometimes negative thoughts were a part of Raceworld and needn't have a negative impact on performance. In a similar vein I used to think, and advised swimmers I coached similarly, that being nervous was a natural part of the pre-race process and just meant one cared about the outcome.

Obviously the experience of Raceworld changes as soon as the race starts, and involves different thoughts (hopefully not too many!) and challenges. Swimming is a sport particularly conducive to Raceworld because most events don't take very long; during the race one's senses are dulled, and one can't interact in any way with other competitors during the contest. In sports that take a long time and/or where one can interact with other competitors it is not possible, nor probably desirable, to remain fully in Raceworld for the duration of the contest.

Early in the serious part of my swimming career I would have to 'activate' Raceworld by doing any or all of sitting down, calming myself, breathing rhythmically, or visualising some or all of the race. With experience my brain would automatically enter Raceworld, usually in the marshalling area or even as late as behind the blocks.

What Raceworld demands above everything else from the serious competitor is an absolute commitment to applying oneself with full physical and mental effort. I used to

imagine that was my 'contract' with Raceworld and that it would be somehow 'disrespectful' to Raceworld to do anything less.

Essentially this means 'doing your best' every time you raced. In swimming this mostly relates to physical effort, but also applies to pacing and skill execution. A swimming race is not complicated; it isn't like a football game, playing golf or a tennis match with all the associated variables and strategies required. There is one best way to swim the best possible time one is capable of, and all one can do is try and do that every single race.

All a competitor can ever do is give maximum effort – rationed as evenly as possible (see Part Two, Chapter 5, *Pace Judgement*) – and execute all relevant skills as well as possible. While this is simple, it isn't easy to do every race. I was constantly striving to extract more effort from myself, and believe I was in my mid-to-late 20s before learning how to fully exert myself in races. I didn't fear 'the pain' but came to almost relish it. I'd see discomfort as an adversary to conquer and internally say to myself: "If you think that hurts, how about this!" before pushing harder.

Before every race, consciously or subconsciously I had in mind a time I thought I was capable of if I gave full effort, paced the race properly, and executed my skills to the best of my ability; and my goal was always to get as close as possible to that time. What more could I do? That is what Raceworld required of me. I wasn't particularly competitive in the traditional sense of desperately wanting to win; but I was ruthlessly 'competitive' with myself and what I believed I was capable of. If my best was better than everyone else's best then of course that was a nice bonus, but it wasn't my primary focus. For me swimming competition was principally me versus the timing system. This means it was possible for me to be happy with a swim irrespective of where I finished in any race. It was also possible to be happy with a time that wasn't a PB, if I thought the time I did was the best I was capable of under the circumstances (e.g. if I wasn't fully fit; or wasn't shaved down or tapered; or the race was my sixth of the day; or I was recovering from illness etc.)

You shouldn't need extrinsic motivations to swim fast, even though you may appreciate the resulting rewards, you just need your pact with Raceworld, which doesn't so much give you opportunities to win as give you opportunities to swim as fast as you possibly can and to experience that exhilaration of doing something with maximum effort. The bottom line is that whatever the serious competitor's motivation is, be it winning, beating a particular rival, breaking a record or whatever else, the best way to achieve what they want is adopt the commitment to doing their best whenever they compete – and revel in Raceworld!

7. OPEN WATER

OW swimming is one of the fastest growing participation sports in the world and is enjoyed by a huge range of swimmers of all ages from weekend warriors to elite competitors. Wherever there is water there will be OW competition, be that in oceans, seas, lakes, rivers or even holes cut in the ice. OW swimming can be a standalone discipline over varying distances or part of multi-disciplinary sports such as triathlon. While much of the general swimming information discussed in this Handbook also applies to preparing for OW competition, there are some other specific considerations that should be addressed, and it is these differences that we will discuss in this chapter. The information presented here is relevant for elite and adult/Masters OW competitors alike, and while some information

(especially that related to safety) should be adhered to by *all* OW competitors, the degree to which the more competition-specific information applies naturally depends on how seriously individual adult/Masters competitors take their OW competition.

Open Water Swimming v Pool Swimming

Swimming in the controlled environment of the pool where lane ropes and black lines keep swimmers separate and swimming in a straight line is an easier task than that which faces OW swimmers where currents, waves, other swimmers and watercraft, water temperature, variable buoyancy and aquatic creatures all add further complexity to an already complex physical activity. Preparing for these differences is essential for all OW competitors so they can remain calm and relaxed, perform at their best and ultimately enjoy their experience. The general rule is that the more you expose yourself to the variables the better you will handle them when they inevitably arise.

Training

Almost every corner of the globe now has organised OW events that range from short swims for novices or as part of short triathlons, right up to 25km marathon swims. The distance of the event you are training for will largely determine the type and volume of training you will need to do to be adequately prepared. For most adult/Masters competitors, OW events will be up to 5km in distance and their general aerobic pool training will likely be enough to get them in the right shape to complete the distance. Distances over 5km require specific training programs that ensure the swimmer is appropriately prepared. Swimmers should not underestimate the undertaking of long-distance OW events, bearing in mind that the generally accepted wisdom is that every kilometre swum is the approximate equivalent of a 4km run, so a 20km ocean swim like the Rottnest Channel Swim equates to an 80km ultra-marathon, something which is a serious undertaking.

In general, for events over about 3-4km a good basic principle is that you don't need to be training any more than about 25% more than the total race distance in any training week, i.e. if your event is 5km then your total training distance for the week can be as little as 6-7km, although this can vary considerably depending on your physical capacity and how seriously you are taking the event. If you can manage more than that and you are not overloading your system, then go for it; but there is no need to be doing four 5km sessions a week unless you are able to and want to. Many OW swimmers and coaches will focus too much attention on the volume of training and not enough on the other factors that can make or break a swim. That said, you must still respect the distance and train enough or you will struggle in the latter stages of – if not throughout – the event. Important factors to consider are managing training load; spending time in the body of water you intend to swim in to both acclimatise and to feel familiar with the environment; fuelling adequately before, during and after swims; and balancing your training sets with a mix of aerobic, speed and technique work, and dryland and mobility exercises. The best OW swimmers are well-rounded athletes who approach this discipline with a holistic mindset and respect the environment in which they will be swimming.

Water Acclimatisation

One of the biggest differences between pool and OW swimming is the water temperature and its variability. Hypothermia is a very real concern but can largely be avoided by doing regular training in cold water. It usually takes the body six to eight weeks of consistent training in a particular water temperature to build up some level of meaningful acclimatisation. The longer the time that will be spent in cold water for an event, the longer and more frequently you should train in water of a similar temperature. The benefits of cold water swimming are well-documented and have been shown to improve mental health as well as reduce the incidence and severity of many illnesses, but treat cold water with respect and adjust slowing by incrementally increasing training duration, wearing a wetsuit initially and two caps if necessary and drinking warm drinks during and after training. Remember that water can also be too warm and hyperthermia can also be a serious problem. Where you intend to compete in an event where the water will be warmer than you are used to, you should similarly acclimatise.

Open Water Skills

There are some skills specific to OW competition that, like any skill, will improve with practice and some of which can be practised in the pool with a bit of creativity.

NAVIGATION

Practise how to swim in a straight line around a course or up and down a coastline.

SIGHTING

Practise how to lift the head and sight markers (buoys, jetties, trees, shoreline etc), without interrupting your stroke rhythm.

NEGOTIATING CONDITIONS

Currents, swell, chop and waves all pose challenges for swimmers, so practise negotiating these conditions while remaining relaxed.

TURNING BUOYS

Practise how to negotiate the course turning buoys (which may also be the marker buoys) without losing momentum or getting caught up in the tangle of legs and arms of other swimmers. Actively use the flow created by others to sweep around and back onto the straight line of the course.

FUELLING

In long open water swims you will need to fuel during the race so practising what you are going to consume and how you will consume it is as essential as training your body to swim the distance.

STARTS

Starts can be in-water, from a jetty or other fixed object, or from the beach (running start). If you are sufficiently confident then move to the front; if you'd rather avoid the congestion and chaos then move to the back. Wherever you choose to start, create your own space and try not to get hemmed in by other swimmers. If necessary, you may need to swim a

little harder than you've otherwise determined to be your ideal pace (see *'Pacing'* below) just to get some clear water but try to quickly settle back into your desired pace. For beach starts you should practise running into the surf and how to duck dive under waves.

DRAFTING

Using the draft created by other swimmers is a very effective way to conserve energy and swim faster and the most efficient way of doing that is to swim close to the hip of a slightly faster swimmer. This takes practice and a certain amount of confidence. If being close to someone you don't know doesn't appeal, try swimming behind their feet. Conversely try and avoid being used for drafting.

PACING

The general principles of pacing for pool competition (see Part Two, Chapter 5, *Pace Judgement)* also apply to OW competition, subject to what is said in '*Starts'* above, and below.

Part of your training regime should be determining what pace you can consistently maintain over your chosen distance. You will not perform at your best over the full distance by starting too fast (with the exception of clearing the congestion of the start) and then dealing with the consequences of your attempt to defy basic physiology for the rest of the swim. The best OW swimmers do have the ability to turn on a burst of speed when they need to. Learn and practise the 'feeling' of your race pace so you can lock into it.

FINSHES

As with starts, OW competitors will experience a variety of finish scenarios in events and should know and be prepared for what to expect, and practise the relevant finish where possible. Increasingly in community events and in all elite competition, there will be an in-water overhead boom/pad that the swimmer will need to tap their timing band onto to record their finish time. The swimmer should touch the boom/pad with the hand that has the timing band on it as part of the stroke recovery, i.e. in one continuous movement without stopping.

Other events may have the finish line on the beach or shore, often with a timing mat on the sand so swimmers will need to exit the water and run up the beach (often through a finish chute) to record their time. This usually means the water depth will decrease – or vary – as you approach the shore, and you will need to decide when to stop swimming and when to stand up. You may be a bit wobbly on your feet so exercise caution when you first stand up and don't try to run through water that is deeper than shin-height unless you are an experienced surf swimmer. Be wary of sandbanks and potholes. 'Porpoising' through the shallower water can be effective but again, exercise caution with the water depth.

Beach finishes may involve swimming in through surf, so be aware of any waves coming in behind you. Be prepared to 'catch' a wave if you have sufficiently proficient bodysurfing skills, or to allow the wave to pass over or past you if you cannot 'catch' it. Obviously trying to gain some benefit from waves is preferable.

Equipment

Other than whatever equipment you would ordinarily use in the pool, you may consider:

- Getting an open water swimsuit (You can train/race in a wetsuit but most open water events will exclude wetsuit swimmers from prize categories)
- Wearing two caps to help with heat retention in cold water
- Getting polarised goggles for better vision and sighting
- Swimming with an open water float to make you more visible to craft and in which to store food/drink, keys and phone
- Using a water-resistant lubricant (e.g. Ocean Grease, Body Glide or Vaseline) to prevent chafing and help keep sunscreen on, and help to keep warm during long swims
- Taking antihistamines prior to swimming to assist with reducing the reaction to marine stingers
- Taking sea-sickness tablets if you are prone to motion sickness

OW swimmers should *always* swim with another swimmer or with a paddler in training or in longer events.

8. MASTERS SWIMMING TYPES

Masters Swimming is a wonderful thing to be involved in and is hugely beneficial to participants in many ways, physical, mental and social. Consequently I hesitated in including this chapter, as I do not intend to be disparaging about the Masters Swimming community, and certainly don't want to offend anyone. Nevertheless I decided to include the chapter for a bit of fun…so please read it in that spirit.

Over the years I have identified, amongst all the delightful, interesting and strange people I have met through Masters Swimming, a variety of Masters Swimming types or personalities. Most swimmers demonstrate the characteristics of more than one type – I certainly have been more than one type over the years. There isn't necessarily anything good or bad about any of the types; we should embrace all of them as being part of the rich fabric of Masters Swimming. See if you can identify which type or types you are from the list below, or identify other swimmers you know who fit one or more types:

The Perpetual Competitor

The Perpetual Competitor has been a serious and most likely successful competitive swimmer who is very keen to continue this success for as long as possible. They want to win as many events as possible and select meets and events with this being the priority. They know the records in their best events, and target them assiduously. They compete more regularly while they are in the younger years of an age group when they have more chance of winning and breaking records. They may be less likely to swim relays or do timekeeping if this compromises their ability to prepare for or be fresh for their best events. They may have difficulty understanding and accepting that even they are going to eventually and inevitably get slower. Masters Swimming hasn't managed to attract as many of these swimmers (especially amongst the ex-*highly* successful elite swimmers) as one might expect, or would be good for the sport.

Good luck to you, but try not to take it all *too* seriously; it's just Masters sport.

The Unfulfilled Competitor

The Unfulfilled Competitor was a good competitive swimmer when they were young but retired from competitive swimming before achieving their full potential for any number of reasons, as did many competitive swimmers. They are desperate to 'make up for lost time' and achieve the success they missed out on when they were younger. Depending on their age, they may even pick up where they left off or even improve on their PBs for some time before the inevitable decline begins. They demonstrate most of the characteristics of The Perpetual Competitor, and are often the most successful Masters competitors over the long term.

Good luck to you, but try not to take it all *too* seriously; it's just Masters sport.

The New Competitor

The New Competitor only became involved in competition as an adult, and has fully embraced training and competition, becoming obsessive about seeking all available knowledge about how to improve. They may idolise the best swimmers in their age group and/or become fixated on beating particular swimmers. They may or may not become quite successful, and, if they don't, find it difficult to appreciate that if one doesn't have the background that a life-long swimmer has had, or have enough of the countless qualities that constitute talent, all the training in the world and the best health, diet and lifestyle isn't necessarily going to make them successful.

Keep trying folks; at least you'll be fit and healthy!

The Full-On Swimmer

The Full-On Swimmer may also be a New Competitor, and/or a Club Swimmer. They are fully involved in and very enthusiastic about Masters Swimming; swimming many meets, participating in the Masters Swimming Endurance Program, and competing in OW swims. They tend to do the longer distances at meets, including 400/800/1500 in any stroke because these give them most aerobic benefit and their best chance of achieving higher places. They are typically not great swimmers, but may not care, as they are happy doing as much swimming as they can.

Good for you, you are keeping fit and healthy; but don't overdo it!

The Club Swimmer

The Club Swimmer is often also a Full-On Swimmer, and/or an Official/Swimmer. They are totally committed to their club, swimming many meets and events to score as many points as possible *for the club*. They probably have an official position within their club or at least contribute a lot of time coaching or doing whatever they can to ensure their club is active and successful in all respects.

Well done folks, we need more of you!

The Official/Swimmer

The Official/Swimmer is often also a Club Swimmer. They may not even compete, but are heavily involved in officiating at meets. Most of them officiate for all the right reasons, wanting to give something back to Masters Swimming, or just facilitate others doing what they want to do. The odd few revel in the power and authority the role gives them, or socialise while officiating and don't really take their role seriously.

Well done folks, we need more of you!

The Social Swimmer

The Social Swimmer craves the social contact that the Masters Swimming community offers. They may also be looking for a partner (or partners). Swimming performance is a secondary or lesser priority as they just love a chat at training and meets, and are always keen to attend club and post-meet functions.

Good for you! Just don't rave on too much (see The Too-Much-Information Swimmer).

The Reappearing Swimmer

The Reappearing Swimmer pops in and out of Masters Swimming over the years. They turn up unfit and probably overweight, usually at the beginning of summer, wanting to get in shape and/or swim fast. They'll be dedicated for a while – maybe even for a whole season and end up fitter, trimmer and faster, having swum at least the odd meet or OW swim; and full of promises about staying fit and competing from now on. Then they disappear again for another lengthy period. They are often characters, and may be a regularly lapsing Recovering Addict.

Try and stick with it folks, 'cause each comeback gets harder and less likely!

The Technique/Equipment Nutter

The Technique/Equipment Nutter is often also a New Competitor. They think that technique is everything, and believe if they could just find and implement that one or more magic technique change(s), they will be transformed into a successful swimmer. They have all the latest equipment and training aids in the belief these will help bring success.

Sorry folks, but there's a lot more to it than that!

The Recovering Addict

The Recovering Addict has had an addiction to or obsession with a less healthy or constructive pursuit than Masters Swimming, and is seeking to replace this addiction with a more beneficial one. The addiction may have been alcohol, drugs, tobacco, food, gambling or something else. Swimming training and competition are perfect healthy substitutes for addicts and obsessives, as much about swimming both attracts and enhances these characteristics.

Go for it, folks, 'tis a far, far better thing you now do!

The Too-Much-Information Swimmer

The Too-Much-Information Swimmer is an extreme version of The Social Swimmer. They are hard to get away from at a meet, and one must be careful when asking them questions. If they are a Perpetual, Unfulfilled or New Competitor any questions about how they are swimming or how they performed in a race could result in a lengthy answer including way too much information about interrupted training due to illness or injury; other reasons why they are not at their best; a season history of their performances; what went wrong in their race; who they did or didn't beat; how long it has been since they last swam that fast; what records they broke; or how much faster they are going to swim at some meet in the future. If they are a Social Swimmer or don't really care about performance, questions about how they are or what they have been up to could result in a lengthy answer including way too much information about their lives, work and relatives and friends you have never met nor care about.

Be cool, folks!

The Annoying Trainer

The Annoying Trainer is the bane of adult squad and Masters coaches and other swimmers. They usually haven't had a background in competitive swimming or squad training. They demonstrate some or all of the following characteristics:

- They don't understand basic swimming etiquette and swim in the middle of the lane; queue incorrectly at the end; don't allow faster swimmers to pass; or stand in the middle of the lane at the end, preventing others from turning or finishing into the wall.
- Even despite regular exposure to training programs and the terminology used verbally and on the whiteboard by their coach, they still don't understand what is required in most training sets.
- They don't understand the pace clock or time cycles and don't leave the wall on time, even when they are capable of doing so.
- They don't like leading the lane even if they are the fastest in the lane.
- They don't leave the correct gap between swimmers and swim on others' feet.
- They stop or change stroke during sets, causing chaos in their lane.
- They stop to put on fins or other equipment during sets, causing chaos in their lane.
- They leave early on timed efforts to do a 'faster' – and consequently incorrect – time.

Get with the program folks, or go and annoy others in a public pool!

The Nearly-Non-Swimmer

The Nearly-Non-Swimmer can be of any age and may also be an Annoying Trainer. Their technique (such as it is), especially if they are older, is impervious to correction, and they may be incapable of doing butterfly, backstroke and/or breaststroke. They may even swim regularly, be in reasonable physical condition, and/or be quite fit; but despite this, their chronic natural lack of buoyancy, coordination and feel for the water mean it is hard to believe they can actually swim so slowly while remaining afloat.

Well done, folks, you are at least getting some exercise, and make average swimmers feel very competent. You are no doubt very good at something else!

The Ideal Swimmer

The Ideal Swimmer exhibits all the best qualities of the other types. They may or may not be great swimmers. They swim primarily for health, fitness and general wellbeing, but like to compete and swim as fast as they can, focusing on their times and not their places without caring *too* much about either. They are pleasant, interesting and interested; do their fair share of timekeeping and otherwise help out at meets; and are popular and helpful club members.

Hello, hello, any of you out there? Yes? You guys are the best.

ABOUT THE AUTHOR

The author, Mark Morgan was born in Sydney on 18 October 1957.

Mark competed for Ryde (initially), Carlile (mostly) and later Knox Swimming Clubs in state, national and international competition. He:

- Represented Australia at eight international meets;
- Won two gold (100 FS, 4x200 FS Relay), one silver (4x100 FS Relay), and two bronze (200 FS, 4x100 Medley Relay) medals at the 1978 Commonwealth Games in Edmonton; and was a dual relay finalist (4x100 FS, 4x200 FS) at the 1978 World Chps in West Berlin;
- Won five gold medals in individual events at Australian Chps, and 15 gold medals in individual events at NSW Chps;
- Set one Commonwealth Games record, six Australian records and seven Australian All-Comers records in individual events;
- Competed in 19 Australian Chps meets spanning 23 years (until aged 40), and 26 NSW Chps meets spanning 34 years (until aged 44); swimming in 15 Australian 100 FS finals, 13 200 FS finals and nine 100 BF finals;
- Was selected as vice-captain of the Australian swimming team for the 1980 Olympic Games in Moscow, but chose not to compete due to the circumstances at the time;
- Was NSW Swimmer of the Year in 1979; and the inaugural Swimming Captain at the Australian Institute of Sport in 1981.

Mark represented Warringah Masters (NSW) in Masters competition. He:

- Won one gold, three silver, and three bronze medals in individual events at two World Masters Chps in 1986 (Tokyo) and 1988 (Brisbane);
- Set nine world Masters records and 64 Australian Masters records in individual events;
- Was NSW Masters Athlete of the Year in 1994; and NSW Masters Swimmer of the Year in 1986 and 1994.

Mark was either Assistant Coach or Head Coach of Carlile Swimming Club from 1985-89 and from 1995-2004. During these periods:

- Carlile Club produced many NSW and Australian champions and international representatives and was regularly Australian and NSW Champion Club at open and age group levels.
- Mark was an Australian and NSW team coach.
- Mark was a Board Member then Chairman of the (then) Australian Swim Coaches and Teachers Association (NSW Branch); and was a Board Member of (then) NSW Swimming.

Mark is now the Coach at Palmwoods Aquatic Centre in Queensland's Sunshine Coast hinterland. He has recently written a book called 'Mark Time – The Story of a Dopey Swimmer'.

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Elena is a highly experienced coach who specialises in open water and Masters swimming coaching. Elena is the principal of eSWIM, in Perth. She is a Masters Swimming Australia Coach; a Coach Educator and an Assessor for Masters Swimming Australia; a member of the Masters Swimming WA Coaching Committee and is also an active coach (and competitor) with her own Masters club, Claremont Masters, of which she is a Life Member. Thank you Elena.

I would also like to gratefully acknowledge the contributions and editing assistance given by my sister Sally Bell. Sally is a former Masters world record holder and multiple Australian record holder, and a Life Member of Claremont Masters.