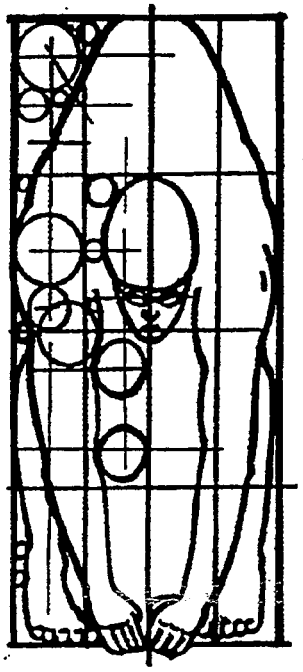

AUSTRALIAN MASTERS SWIMMING COACHES NEWSLETTER

NATIONAL OFFICE
PO Box 207
MARLESTON SA 5033
Telephone (08) 8344 1217
ax (08) 8344 1217

EDITORIAL: AMSCN
PO Box 61
CQU Post Office
Rockhampton Q 4701
Telephone (07) 4926 5269

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Editorial

Hello Everyone

We've just returned from the Asia Pacific Masters Games - what an event. I spent some time down at the swimming, the TSS pool looked great and I believe some great times were swum. Congratulations to all those taking part, I hope the training paid off. If you didn't perform as well as you would have wished, I hope you at least had a great time socially. I was sorry we couldn't stay till the end of the swimming, but we had to get back to Rockhampton.

A special thanks to Max Kavanagh who will be writing a regular physio section, and to Bill Mildren for his article "Heads you Win". Bill you have a wicked sense of humour, may all the ladies with perms get even with you. Thanks again to Judy Bonning, Russell Ogden and Queensland Masters Swimming for allowing me to reproduce various articles written by them. Thank you again to David Nowlan who keeps coming up with those clever ballads.

I desperately need names of coaches so we can continue with our 'Coaches Profile'. Send their name and address to me and I'll organise the rest. Perhaps the State Coaching Directors could send me this information.

This is the last issue for 1998. I hope you have enjoyed them. Please send contributions and any suggestions to improve the newsletter to the editorial address in the bottom left hand corner of this page.

Have a Merry Christmas and I'll see you all in 1999.

Claire Reaburn

This Issue

FROM AROUND THE BRANCHES

National Coaching and Education News

Branch Coaching Directors and members of the Coaching panel have been busy over the past few months helping to review the Level 2M coaching accreditation course which is due for re-accreditation next month. My thanks to those contributors as it is quite a large task and having willing assistance is most welcome. Victoria, Qld, and NSW have conducted level 1M courses in the past few months and WA is conducting a Level 2M course at present. If members are interested in learning about coaching they should contact their Branch Coaching Directors to find out when courses are planned.

Branches have just received copies of the Level O Coaching course which is designed to orientate interested people towards coaching. The course is 6 hours long with no exams and has practical workshop sessions on the strokes. The course is ideal for those who perhaps help out on club sessions but haven't yet obtained accreditation. The skills from this will allow them to go onto doing an accreditation course if they wish to. Also it gives an idea of whether coaching is your "cup of tea". NSW may be piloting in their 'It's Never too Late to be a Coach' project.

Speaking of learning, the "Sports Coach 98" conference is on in Melbourne from 25th to 28th November at the Convention Centre. Peter Reaburn (also from the National Coaching Panel) will be presenting a paper at the conference. There are several papers and workshops of interest for AUSSI coaches and members. In particular there are papers on water activities for recovery, fitness and rehabilitation. The use of swimming and water-based activities for training is a developing area and we should be looking for ways to be involved or benefits for AUSSI members. Anyone interested in attending should ring the organisers on (02) 9908 4944.

Kay Cox
National Coaching Director

Western Australia

A Level 2M coaching course is being conducted at present and the coaches are having a great time learning all sorts of interesting things. Several coaches have also used the opportunity to gain updating points. One new idea we have tried this year is the use of video to analyse the coaches performance. This is proving to be a challenge but hopefully a valuable experience.

On the subject of video use in sport, I recently attended a workshop where video shots were downloaded into a computer and software was used to analyse the action. The programme compared the action to that of an elite player and with the assistance of a biomechanist was able to produce a report of the skill and what needed to be done. This can be applied to swimming and is great if you have underwater shots as well.

In WA the Coaching Foundation asked for submissions for a Scholarship for a coach to attend the "Sports Coach 98" in Melbourne this year. After a selection process I was very fortunate to be awarded the Scholarship to assist with me attending the conference. The State Coaching Centres in each Branch provide support to coaches on a variety of matters and its well worthwhile to find out what they have to offer.

Sue Pow our State Coach continues to visit clubs on a regular basis on invitation. During these visits she supports coaches and helps out with

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From Around the Branches
continued from page 1

advice and passes on ideas from other coaches and members.

As a result of several changes to our competition events and dates the coaches in WA have a new challenge in that they have to refocus their yearly plan. The trend is for the summer months to focus on long endurance swims with a short late sprint season. This is proving perplexing until everyone gets used to the system and decides what their main focus will be.

Kay Cox
WA Director of Fitness and Education

Northern Territory

The biggest event in the swimming year for the NT Branch of AUSSI - the Honda Central Australian Masters Games - has just been completed with NT swimmers making up most of the competitors, as well as taking out a good portion of the medals and records. This has pleased the coaches greatly, finally seeing swimmers' hard efforts in training rewarded and those nagging injuries and ailments overcome in the face of stiff competition. Twins, Gerda Williams and Jannie Thompson, along with Helen Constantine (also a twin) taking gold in all events as well as age champions and numerous records.

Alice AUSSI has just resumed its season and although without a coach has worked out a shared system of squad supervision come coaching to suit its enthusiastic members. Hopefully, with the renewed interest coaching accreditation will follow in the not too distant future as sadly the NT Branch is now void of Level 1M coaches. As the Coaching Director once again (1999) this is a task I will need to address through the branch.

Arnhem Salties decided upon attending the Asia Pacific Masters Games on the Gold Coast this month and we eagerly await results of their performances.

The recent visit of past Olympians Shane Gould, Murray Rose and Michael Wendon, along with coach Laurie Lawrence, gave many Darwin Stingers the chance to catch up and chat with their heroes, comparing stories, injuries, training sets and times and of course the obligatory photos just to prove it all happened. The event was part of a parliamentary reception associated with the Olympic Fundraising Dinner and well attended by all in the swimming fraternity.

Jacinta Stirrat
NT Branch Coaching & Fitness Director

North Queensland

The Level 1M course held at Mackay 10/11 . 10.98 run under the new guidelines was accepted very well with 7 new coaches attending. The feedback from the participants is that the new course is better than the old course.

A suggestion for a story as it is now summer time - the importance of hydration.

Qld has our own State Newsletter available from State Administrator for $1.00 each. 12 issues available.

Rod Porteous

Victoria

Our Level 1M course (theory) was run on the weekend of 17/18 October with 17 enthusiastic candidates. The practical component will take the form of a Stroke Clinic with lectures and swimming sessions on each of the four strokes. The Clinic is open to all AUSSI members and has been priced to suit even those members on a tight budget. We look forward to a busy day at Ringwood Aquatic Centre on Sat. 28 Nov (spaces still available, ph/fax 03 98092588)

Sports Coach 1998 (Australia's Premier Convention for Coaches) is on at the Melbourne Exhibition and Convention Centre from 25-28 November. We strongly encourage all coaches and officials to attend this convention which is being run by the Aust. Coaching Council and the AIS.

Jodi-Ann Beard
Administrator - Masters Swimming
Victorian Branch

From the Research

Bananas ain't Bananas

Bananas are a popular carbohydrate snack among endurance athletes. Apart from water, the banana has a high starch content. However, did you know that unripe bananas (green or yellow with a green end) are almost indigestible. This means that the starch we need for energy cannot be broken down by the intestine enzymes and arrives in the colon undigested, ferments due to colon bacteria, and gas and diarrhoea may eventuate. Athletes should thus avoid such bananas and stick to the (cheaper!) really ripe bananas that are yellow with small black spots during exercise or recovery.

The table below may be of interest.

Appearance
- **A** Green with bit of yellow
- **B** Yellow with bit of green
- **C** Yellow
- **D** Yellow with some spots
- **E** Yellow with many spots

	A	B	C	D	E
Days	0	2	4	6	8
Carbo's (g/100g)	28	29	28	27	26
Starch (%)	82	41	26	9	3
Sugars (%)	7	48	63	81	88
Rest (%)	11	11	11	10	9

Digestibility:
- **A** Bad
- **B** Moderate
- **C** Reasonable
- **D** Good
- **E** Very good

FIMS Panel discussion on Sports Nutrition. Insider: News on Sport Nutrition, 4(1) 1996.

The XIII th FINA World Sports Medicine Congress

Aquatic Sports Medicine for New Century

On behalf of the Organising Committee, I have the pleasure to invite you to participate in The XIII[th] FINA World Sports Medicine Congress to be hald in Hong Kong from 5 April to 7 April 1999.

The Congress is jointly organised by The Federation Internationale de natation Amatiur (FINA), The Hong Kong Amateur Swimming Association (HKASA), The Hong Kong Association of Sports Medicine and Sports Science (HKASMSS), and The Hong Kong Olympic Academy (HKOA). With its theme of "Aquatic Sports Medicine for New Century", a number of renowned professionals and experts will be invited to make presentations on their latest experience and findings in different disciplines of sports medicine in swimming.

As Chairman of the Organising Committtee, I ensure you that the Congress in 1999 will facilitate an excellent forum for all participants to exchange their work.

Ten Open Water Swim Tips

Dr Peter Reaburn (AUSSI Masters Coaching Panel)

After many years of masters swimming coaching and swimming, I was called back to my surflifesaving roots - open water swimming in the ocean. I was still able to enjoy the training and comraderie in training without the waiting around at meets for hours waiting for a 30-second dash. Then again, maybe it was the fact that most swim meets are 50's and 100's. I know my endurance training and physiology is more suited to the long stuff. Open water suits me to a tee and offers a new challenge.

Below are some tips gained from many years of surf swimming, open water swimming and triathlon team racing.

1. Know the Course and Rules

If a course map is available on the day, be looking at it and the course at the same time so you have the course clearly locked into your head (the shape, the buoy colours and shape, any useful landmarks, the style of finish). If the rules allow a wetsuit, use one. They are a HUGE advantage for all swimmers regardless of ability. Know exactly what wave you are in (cap colour, time of start, order of start, are slower swimmers in the earlier wave?) and plan your warm-up accordingly - it should be as close to the start as possible.

2. Know the Crucial Bits

The warm-up should be spent going over the course. Is the start deepwater or not. If not, walk slowly into the water to check depths and the bottom surface so you know when to duck dive or how hard to attack the water from the start. A potholed bottom can lead some ungraceful falls the unprepared.

Locate the landmarks you can swim towards instead of trying to find the typically small buoys that sometimes sit below chop or in the troughs of waves. This has particular relevance in finishing when you're tired and going for it. A tree or building behind the finish area is easier to see than a set of flags or gates when lifting the head quickly.

3. Holding the Line

Once in clean water, take the shortest route through the course - a straight line. Lifting the head every 10-20 strokes is the way to go in calm water or on the top of swells in the ocean. Lifting the head when starting to press on the strongest arm is the way to go. Lead swimmers, in general, are experienced and can be relied on to swim a straight line. If you're a "backadapacker", never rely on the person in front to hold the line. Lift the head, reorientate and go. Never stop dead - you'll lose momentum, waste energy getting going again and probably get hammered from behind.

Goggles are a habit. Personally, I never use them in open water swimming. They can fog up, they can get water in them, can fall off in waves, be kicked or pulled off in the start. All this upsets your vision and make it hard to hold a line. No goggles, no worries. However, I hear some swimmers say they cannot do without them - your choice.

4. Start Smart

A good start is crucial. Positioning yourself at the front and side gives the strong swimmer a chance for clear water and the chance to lock onto another faster swimmer and draft, draft, draft. A front position for a weaker swimmer can be disastrous and dangerous with stronger swimmers going over the top of them and giving a punch or kick for good measure. Weaker swimmers should be at the side of the start pack, around swimmers of equal ability or at the back of the pack. Allow for water movement (rips, sweeps) in the ocean by positioning in front of a rip or shallow bank and below or above the first turning buoy mark in the case of sweeps that run parallel to the beach.

> "THE ONLY WAY TO GO IN OPEN WATER SWIMMING IS AT SOMEONE ELSE'S EXPENSE AND IDEALLY THAT SOMEONE ELSE IS A SLIGHTLY STRONGER SWIMMER WHO YOU MAY KNOW OR HAVE SEEN BEFORE, TRAINED WITH, OR RACED AGAINST."

5. Start Aggressively

The first 50-100m are crucial. Sprint hard to gain clear water but not any longer than 30-45 seconds. The lactic acid build up in sprints longer than that will make life difficult later in the race. If caught in a pack, protect the face and goggles by swimming over peoples' legs with forearms - the water movement and pack will keep you moving forward till you get clear water.

6. Draft, Draft, Draft

The only way to go in open water swimming is at someone else's expense and ideally that someone else is a slightly stronger swimmer who you may know or have seen before, trained with, or raced against. Sitting 20 cms behind them is the way to go. Try and avoid touching them in case they get agro or lose their rhythm. Just sit there until it's time to pounce fresher in the last 50m.

7. Stay long and strong

Once in clear water and drafting, lock into the long and strong rhythm used in training. Stay focussed on "long and strong" - it's the most efficient way to go. Breathe every cycle - more air means more oxygen which means less lactic acid, less hurt and better pace.

8. Know the Finish

The finish is crucial. Know it, swim-walk it. What does it look like, where is the actual line, what do the officials want (wristband, number), is it a chute, a set of flags? When to stand-up? An old surflifesaving trick is to stand and wade or duck dive when your hand touches the bottom - a good tip that works.

9. Do the long sets

Anaerobic threshold (85-90% max heart rate) and intensive endurance (80-85% max heart rate) swim sets are the way to go for open water swims. They improve aerobic capacity, anaerobic threshold and economy at race pace. Examples are 10-30 x 100m on a 20-30 second recovery or 5-10 x 400m with 1 min between efforts.

10. Do the straight swims

Ideally open water swims should be done regularly in training. The ocean, a lake, a river make a great break from training. If unavailable, ensure you do the regular long straight swims (1-3k plus). These swims groove the long and strong technique, improve economy and teach the body to burn fat as a fuel more effectively.

Open water swimming is an art. Train endurance, know the course in your head, hammer the start, get clear water, stay long and strong, and draft, draft, draft. See you on the start line.

2000 AUSSI National Swim

21 - 23 April 2000

At their recent Annaul General Meeting, the Queensland Branch confirmed that Gladstone will be the host city for the 2000 National Swim. This modern city, located 550km north of Brisbane is just south of the Tropic of Capricorn. It has wonderful subtropical climate and an excellent array of tourist attraction and facilities. The dates for the meet have been set, and we can be sure that the Gladstone Gropers Club are planning a warm and wonderful welcome.

The Dry Side of Training
Staying in Shape with Limited Time

by Judy Bonning (Past President of MACA and Past Chairman of the Coaches Committee of USMS)

For most of us the "wet side" of training is well regimented. We attend regular swim sessions, schedule practice time and compete in meets with fairly rigid consistency. But not necessarily so for the "dry side" of training. This article takes a look at the many things you can do 'out of the water' to achieve peak performance.

One of the greatest obstacles that adults face when trying to maintain fitness is finding enough time in a busy schedule to train and recover properly before the next workout. If you did everything that all the books and articles on training recommended, you would never see your families, you would get six or less hours of sleep at night and you would probably be so stressed at work that your job performance would suffer greatly.

How to Achieve a Peak Performance

There are seven factors that affect peak performance; the goal of an athlete is to try to have all seven come together at one perfect moment. Even adults with limited free time can make the most of these significant seven factors:

Genetics - Fortunately, or rather unfortunately for most, this is something over which you have no control. The only thing that you can do is to thank (or blame!) your parents, then accept the fate that has been bestowed upon you and try to deal with it as best you can.

Nutrition - Most educated adults already have a great deal of knowledge on this subject. Eating a low-fat, low-sugar and high-carbohydrate diet is one of the keys to success. (Note that I make no reference to Ding-Dongs, Ho-Ho's or Twinkies!) Eating properly will assist in weight control and fill the muscle cells with the much needed glycogen that is necessary when training. Hydration, which is accomplished best by drinking lots of water, is another important aspect of nutrition that is often neglected. There have been many great athletes who have trained diligently, only to blow their big event by not eating properly and allowing their muscles to be depleted of the necessary energy sources. This is important during the season, prior to the event and even on the race day. By eating properly you can maximise your time spent training.

Mental Activity - Sports psychology has come a long way in helping our athletes to perform at their best. Skills such as visualisation, relaxation and goal setting can be developed by the willing adult. Keeping proper mental focus is important throughout the season - not just on the day of the big event.

Training and Competition Aids - Today's swimmer is blessed with a multitude of training and competition aids which enhance performance, yet take no additional time to use. Swim fins, paddles, drag suits, goggles, pace clocks and pull buoys are just a few of these items. There have also been many items that have enhanced our competitive side as well. Fast pools, shaving down, waveless lane lines and paper suits are examples - use these to your advantage!

> "EXERCISE SHOULD BE A POSITIVE ASPECT OF YOUR LIFE, NOT AN ADDITIONAL SOURCE OF STRESS."

Drugs - These are not the drugs that are harmful, such as steroids. These are the drugs such as the moderate use of aspirin to prevent swilling, beta blockers that are used by some heart patients on medications that are necessary for some asthmatics. By using the necessary drugs properly, training can be enhanced. (Always check with your physician before taking any medication).

Chance - This is the luck of the draw. In an outdoor pool, it could be the weather conditions. These are things that you have no control over, so it is usually best to accept the circumstances and not waste time and energy fretting over them. Remember, the conditions are almost always the same for everyone. So relax!

Conditioning and Training - Learning how to make the most of your training is what is important for the young and old. Much time can be saved by using proper training techniques. Mega yardage is out, quality yardage is in!

A Moderate Lifestyle for Success

Stress is an inevitable part of living that can be reduced substantially by exercising moderation in our lifestyles. Your goal should be to balance work, sleep, diet, exercise and recreation/relaxation. If any one of these becomes too dominant, then serious problems will arise. Exercise should be a positive aspect of your life, not an additional source of stress. Overtraining can lead to many problems including martial stress, illness, depression, weight loss and fatigue. So it is important that we make the most of our training time, but do so with the proper degree of moderation.

Maximise Your Training

In addition to the actual swimming, a number of other activities can help maximise your training. Most of these activities can be done in just a few minutes each day or even every other day.

Stretching Exercises

Stretching is definitely one of the most neglected components of adult exercise routines. And for the competitive swimmer, these exercises are even more important! The lack of flexibility will cause stroke defects and inefficient stroke mechanics. For example, few people realise that the lack of ankle flexibility is the primary reason that most adults have extremely poor kicking abilities. Triathletes and runners have the most difficulty with inflexible ankles. A good stretching routine will;

a. Enhance stroke mechanics;
b. Allow maximum use of strength;
c. Enable the body to be more effective and efficient;
d. Prevent joint problems, bursitis and back problems;
e. Help body balance;
f. Reduce injuries.

There are many, many different types of stretching exercises. The important point to remember is to establish some type of routine, even if it is only for five or ten minutes per day. Do not set yourself up for failure by trying to do too much or by omitting your stretching altogether. Many books and articles instruct everyone to stretch for 30 minutes to one hour per day. Realistically, who has time for that?

It is important to find a time that is best for you. It should be a time of day when you will have the fewest interruptions and a time that will hopefully develop into a regular routine. Some people stretch while they are watching the evening news or reading the paper. Some find time to stretch while at the office or at home talking on the phone. The ideal time to stretch is before and after you swim. Stretching in the pool after the muscles have warmed up with some easy swimming is very beneficial. It is easy to stretch while waiting in between sets or while socialising. In the jacuzzi after the work-out is also a great time to stretch. By

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The Dry Side cont'd from page 4

using the walls of the pool or by using a partner, there are many great flexibility exercises that you can do on land or in the water. If possible, try to talk your teammates into meeting before or after practices on a regular basis to stretch. It's a great way to socialise as well as increase your flexibility.

Abdominal Exercises

The abdominal muscles are consistently used in swimming, especially when executing turns. To use them most effectively in the water, we must develop them 'on land'. There are many, many good abdominal exercises, such as crunches with the legs in various positions, v-seats, twisters, side crunches, single leg lifts, flutter kicks, etc. An adult swimmer can do several sets of stomach exercises in only two to three minutes per day that will improve abdominal strength. Select several different abdominal exercises and perform up to 25 repetitions in each set. Rest 10-15 seconds between each set. Most adults begin with only five repetitions of each exercise, then increase the numbers as they get stronger. You should be able to tell a difference in only a few weeks. By strengthening the abdominal muscles, you also decrease your chances of developing future back problems.

Weight Training

A swimmer can save a great deal of time by building much needed strength in the weight room versus trying to build the same amount of strength in the pool. There are no magic machines in the weight room, but a good overall strength building program can help a swimmer tremendously.

Some adults think there is a particular machine that you should use if you swim butterfly, but if you're a backstroker a different machine is best. Most of our college and club coaches agree that a general strength-building program is the most beneficial. It is true that there are certain muscle groups that generate a larger percentage of the power than other muscles for the activity of swimming.

Many swimmers have a misconception that when they swim it is primarily their chest muscles (pectorals) that they are using. But if you are swimming correctly, it is your back muscles (latissimus dorsi) that are being used the most for forward propulsion. Therefore, the chest muscles are often underdeveloped. Have you ever noticed that many of our swimmers are round-shouldered and have poor posture? This is caused by overdeveloped chest muscles. Many coaches are putting more emphasis on exercises, such as the bench press, in order to strengthen the chest muscles so that swimmers will have better muscle balance and posture. Stretching exercises will also help improve posture, muscle balance and flexibility. Both weight training exercises and stretching are extremely important for proper swimming technique.

A good general strength training program can usually be found at most health clubs, YMCAs and gyms. Instructors will be able to help you develop a program that is good for you, whether it is Nautilus, Cybex, free weights or the Universal gym. Most adults are busy and do not have a great deal of time to spend in the weight room. If you are interested in achieving a great deal of bulk (which most swimmers and triathletes are not), then it will take more time to achieve your goals. A very adequate strength program can take as little as 20-30 minutes three times per week (minimum two times a week). Although some people like to do more, a good weight workout can consist of 12 to 15 stations.

Ideally, it is best to do your weights every other day. For most adult swimmers, performing one set of repetitions (usually 8 to 12 reps) to fatigue is adequate. Some programs use lighter weights, but perform 25 to 30 repetitions for more of an endurance program. Performing two or three sets with increasing intensities and decreasing repetitions is beneficial for some people and develops additional muscle mass. Adult swimmers with an already full schedule can make adequate strength gains by performing one set per machine. You must develop a program that you will be able to maintain in order to derive the benefits.

"MANY SWIMMERS HAVE A MISCONCEPTION THAT WHEN THEY SWIM IT IS PRIMARILY THEIR CHEST MUSCLES (PECTORALS) THAT THEY ARE USING. BUT IF YOU ARE SWIMMING CORRECTLY, IT IS YOUR BACK MUSCLES THAT ARE BEING USED THE MOST FOR FORWARD PROPULSION."

Most coaches feel that it is beneficial to do your weights after your swimming workout if both are performed on the same day. If weight training is done before swimming, the arms and legs are usually very fatigued and proper stroke mechanics are not maintained during the swim workout. If weights are done following the swimming workout, you can better afford to fatigue the muscles. Ideally, it would be most beneficial to do the weight workout in the morning if you swim in the evenings, or vice versa, or to do them on separate days. However, most adult swimmers do not have this luxury and must do them whenever time permits. Weight training can definitely help increase your swimming speed, but remember, it should be an addition to your swim training program and not a replacement for your swim workout (unless you are already swimming five to six days per week).

Dryland Training

If you are stretching, doing abdominal exercises and performing three swim workouts per week, then the next best thing to improve your swimming (besides weight training - or preferably in addition to weight training) is to develop a dryland training program. If you do not have access to a weight room, a good dryland training program is very beneficial in developing strength and endurance.

If possible, set up a dryland training program in addition to your weight program, but on the opposite days. A good dryland training program can take as little as ten extra minutes or if time permits, up to 20-30 minutes per session. It is more fun to do your training with a team, but most dryland training exercises can be done on your own and almost anywhere.

The following are several different types of dryland training exercise.

Push-Ups - Push-ups will only take about 30 seconds. The best time to do them is right after you finish your abdominal exercises. Push-ups are especially beneficial if you are unable to train with weights. Start with two or three push-ups and build to as many as you like. Remember, keep good form.

Stretch Cords, Bands, Surgical Tubing, Swim Benches - If you are working with tubing, the thickness of the tubing may vary, so be careful that the resistance is not too great. If you are prone to shoulder problems, cautiously monitor your shoulders as these exercises will put additional strain on them. Benefits can be gained by doing ten to twenty minutes of these exercises every other day. This type of training is very beneficial in developing the triceps which are used to finish your stroke as well as build endurance. There are many different positions that simulate the actual swimming stroke and are beneficial in developing proper stroke mechanics. Stretch cords are especially advantageous to adults because they can be easily set up at home or taken on trips. Swim benches are more permanent fixtures, and they are even more beneficial if they are equipped with computer printouts. Repeats and intervals equalling the time of your events are often done with usually ten to 30 seconds rest. Remember to warm up and warm down with the tubing or the benches when performing these exercises.

Plyometrics - Swimmers need a great deal of strength in their legs for pushing off walls as well as for quickly getting off the blocks. A series of plyometrics can be done in two to three minutes. Jumping side to side quickly, high jumps in place, jumping forward and backward, and high jumps performed side to side as well as forward and backward are all beneficial. Fifteen to 30 seconds of each of these exercises with the same amount of rest in between each set are more than adequate for adults. Step-up exercises may be used as well.

Medicine Balls - Not many adults use medicine balls, but their popularity is returning with the college and club swimmers. There are definite benefits and strength gains from using a medicine ball besides the vari-

Continued on page 6

The Dry Side cont'd from page 5

ety that it offers to the athlete. Medicine balls come in different weights, so be careful not to use a weight that will cause too much stress on your joints.

Tethered Swimming - This can be done in home pools or you can tie your tether to the starting block at your local pool. Tethered swimming is swimming in place while attached to tubing by a band around your waist. Swimmers can either swim in place to build endurance or swim against the tubing to the other end of the pool to build strength. Tethered swimming also permits speed work if you swim back to the other end of the pool with the tubing 'pulling' you at a speed faster than you could normally swim. Tethered swimming is stressful on the shoulders and should be approached cautiously.

If you desire to achieve a peak performance, you must carefully balance work, training, sleep, diet and relaxation. It can be done if you make a sincere effort to maximise your training time. In addition to swimming, you can easily add stretching, abdominal exercises, weight training and dryland training to your weekly schedule. All of the above suggestions will only add three to four additional hours to each week. The biggest plus is that almost all of these can be done in the convenience of your own home.

With careful planning, you can make your wish of a peak performance come true!

Heads You Win

by Bill Mildren

Anita Kilmier once wrote in this newsletter that if you only buy one extra coaching magazine it should be 'Swimming Technique'. In the April/June '98 edition of that magazine Cecil Colwyn is described as a 'coaching legend', and now having established him high in the pecking order I would like to quote from his article "Front Crawl".

"The position of the head is important. If the head is held too high, as in the older styles of freestyle swimming the torso and legs will be too low in the water with a consequent increase in frontal resistance. Instead of swimming with the water level at the middle of the forehead, the modern swimmer keeps the head well down with the water line at the top of the head. A low head position keeps the hips high and the entire body horizontal to the surface, allowing a smooth thin stream of water to pass freely under and around the body".

I was prompted to write this after reading 'Some Freestyle Solutions" in the last AMSCN, for obvious reasons. The position of the head is very controversial and it is a fact that some swimmers can get away with doing the most outrageous things, the ladies in particular with their polystyrene legs enabling them to float horizontally without wetting their perms, but for most lesser mortals (men) head and upper body position appears to be of the utmost importance. I agree a strong kick may do the trick, but it has been said, and for most of us I believe it is true, kicking provides very little propulsion, sometimes as little as 5%, so there seems little reason to expend vast amounts of energy on it.

As we get older and particularly those of us who have come to swimming somewhat late in life, good technique is essential. Learning how to reduce frontal resistance effectively is surely an important skill.

Bill Midren, Level 1M (Elizabeth, SA)

Thank you Bill for your contribution. I hope this encourages others to contribute articles or sent in comments regarding articles appearing in the AMSCN.

- Swimming is a technique driven sport • Control, rhythm and breathing
- For every fault there is a drill .. for every drill there is a fault • A drill done 100% right is 100% right .. a drill done 99% right is 100% wrong - this 1% separates champions and would be champion *Quote from Bill Sweetenham*

History of AUSSI

AUSSI Masters Swimming in Australia Inc was originally constituted in Sydney as the Australian Union of Senior Swimmers International (A.U.S.S.I.) on the 22nd September 1975.

The first "Masters" style swim meet in Australia was conducted at the Harbord Diggers club in May 1971. The first in South Australia was on 10th March 1973, and attracted over 100 competitors. Then, on the 30th March 1974, a team of U.S. Masters Swimmers visited Australia for a competition at the Heffron Park Pool, Sydney.

This was attended by swimmers from South Australia, Victoria, Queensland, NSW Country and Sydney. Later on the same year, on the 18th October 1974, a meeting was held at which the Australian Masters Swimming Association was formed. This became AUSSI in September 1975.

The first Australian Masters Swimming Championship was held on 8th March 1975 and the AUSSI National Swim and Club Championships have been held every year since then.

AUSSI played a major role in the formation of Masters Swimming International (MSI) in 1983 and is today a significant contributor to world-wide Masters Swimming.

Through association with Australian Swimming Inc, AUSSI is linked to FINA, the world governing body of amateur swimming. AUSSI Masters Swimming was incorporated in South Australia in 1986. Australia wide there are about 200 clubs affiliated with the 8 branches, one in each State and Territory in Australia.

The National Board of AUSSI Masters Swimming consists of three elected positions, President, Director of Finance, Director of Coaching, and eight Directors, each representing a Branch and holding a portfolio.

"TO ENCOURAGE ADULTS, REGARDLESS OF AGE OR ABILITY, TO SWIM REGULARLY IN ORDER TO PROMOTE FITNESS AND IMPROVE THEIR GENERAL HEALTH".

The day to day running of AUSSI is managed by a paid Executive Director from the National Office in Adelaide. Board Members act as delegates and promote the views of their Branch.

Members are able to submit their ideas and views through their clubs and Branches to the Board which meet in person twice a year.

AUSSI Masters Swimming has conducted three International Swim meets. The first Pan Pacific Masters Championships were held in Sydney in 1981, the second in 1983. In 1988 the FINA/MSI World Masters Swim was held in Brisbane. This last event with some 3000 competitors from overseas and 1000 Australian competitors was until recently the largest swim meet conducted anywhere in the world.

Although swim meets play an important role in the AUSSI programme, the majority of members prefer to be involved in the aerobic activities, gaining points for themselves and their clubs whilst competing for the National Aerobic Trophy.

AUSSI maintains a computerised National Registration System. It is entirely self governing and independent in it's operation and has been commended by many for its professional management, including the Australian Sports Commission and Australian Swimming Inc AUSSI is a member of the Confederation of Australian Sport and is represented on the Masters Committee of that organisation.

AUSSI Masters Swimming stated purpose is: "To encourage adults, regardless of age or ability, to swim regularly in order to promote fitness and improve their general health".

ACT Branch - 02 6241 1249
NSW Branch - 02 9566 1223
NT Branch - 08 8981 2583
QLD Branch - 07 3876 2822
SA Branch - 08 8269 4775
TAS Branch - 03 6223 1317(hm)
VIC Branch - 03 9809 2588
WA Branch - 08 9387 5756
National Executive Director - Ivan Wingate 08 8344 1217

Refereeing the 7th World Masters Swim was a dream - a bad one!

Not entirely, but it certainly was to begin with and much of it was because of communication difficulties and insufficient planning.

French was the principle language spoken at the VII FINA World Masters Swimming Championships held in Casablanca, Morocco on 19-25 June 1998. All the key officials from other parts of the world could speak English to a degree, and only a few could manage French. That's not a criticism, as French is the other official FINA language, the fact is that it made communications very difficult for us who couldn't speak it. Even the referee from Montreal wasn't much help because his English was very poor.

I had the dubious honour of being "Head Referee" which in hindsight was a challenge I enjoyed. I was fortunate to have six competent, experienced English speaking, European, FINA listed officials to assist, plus an AUSSI starter - Ken Liddy from Queensland. Registrations and programming left a lot to be desired as the organisers had obviously underestimated the requirements for an event of this magnitude, so despite all good intentions and effort on the day, it was too little too late. Two FINA Committee people: Lyall Mortimer of New Zealand and Frank Stochl of the Czech Republic took control of the marshalling, and with the expertise of Sport Electric Timing of France, we got the Meet underway only about half an hour late on day one and close to on-time each other day.

The competency standard of the 1,954 swimmers who participated was actually quite good. There were only 54 disqualifications out of 5,579 'splashes' and many of these were because of differing interpretations in different parts of the World.

Some backstrokers for example, were deliberately kicking into the wall after rolling off their back. The Welsh and German referees brought it to my attention and we all agreed that it was an infringement so those swimmers were duly disqualified. It became apparent (through heated debate with some swimmers and coaches) that some states in the USA allow it, whereas others do not. We also had discussions about floating in and rolling off the back prior to a 'flat' turn as there were different opinions amongst the swimmers in these areas too. The English speaking stroke judges all agreed that both were permissible but I have heard since that some swimmers may have been DQd by Moroccan "inspectors of turns" for rolling past the vertical prior to touching when doing the flat turn.

I didn't get to see all DQ sheets and theirs were in French anyway. To be fair, I had a number of them consult me when they were unsure of the legitimacy of a turn and we would resolve the matter using sign language. Actually, we established quite a rapport with the Moroccan officials and they were quite intrigued to see a chief referee actually "swim" - I had quite a cheer squad.

There were the usual number of butterfly arms not making it to the top, uneven kicks in fly and breast and a couple of multiple breaststroke pulls under water, one handed touches etc. as you would see at an AUSSI Meet. Actually it is quite sad to see swimmers at a Meet of this magnitude, not knowing the basic rules - something that all coaches need to pay more attention to.

Quite liberal qualifying times applied to this Meet for events 200m and more, but not for the 75 year olds and upwards. (one older woman took 35+ mins to do her 800m) We were to stop swimmers once they had gone over the qualifying time (which took considerable monitoring for each age group) and there were only two opportunities when we did it - by dropping the false start rope on them. The first was a young Moroccan lady, but she kept swimming and I had to catch her attention to stop by much blowing of the whistle. It didn't create a international crisis as I thought it might - the locals were quite understanding. There were 123 who didn't meet the minimum qualifying times with their swims so their times were not recorded in the results.

There are dozens of anecdotes one could tell, but overall it was quite a good Meet and at "the end of the day" the Moroccans thought they did a good job. I think we should leave it at that.

Ivan Wingate - Referee

Technical Tips

TO MD or NOT TO MD ?
A philosophical view

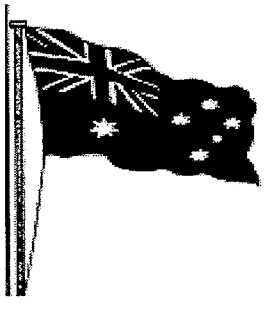
In AUSSI Masters Swimming, rule SW16 refers to the Medical Disability. The rule states that a Medical Disability may be considered at the discretion of the Referee for a non-manifest disability. This rule is only found in AUSSI and only applies to swim meets conducted within Australia using AUSSI Masters Swimming Rules. It has often raised a number of questions as to the necessity or the validity, however it's not widely used and only applies to the Butterfly and Breaststroke. While swimmers are to be encourage to swim with the 'perfect style', it is accepted that as swimmers get older, incur injuries etc, flexibility and mobility sometimes becomes limited. Our philosophy of encouraging swimmers regardless of age and ability to participate may mean that swimmers may not be able to compete without the provision of the MD. Of course swimmers can always just swim freestyle and swim any stroke however they like without penalty.

I believe it is unwise to encourage swimmers to perform Butterfly and Breaststroke (with an MD) because they might have a better chance of medal success if they risk discomfort and injury. There comes a time for some when e g. Breaststroke can cause permanent damage – as one swimmer told me that although she had been a Breaststroker all her life, she realised that the time had come when her knees could no longer cope and she has stopped swimming Breaststroke, even for aerobic swimming – similar to handing in your drivers licence when you can't see the road anymore. There is no wisdom in swimming either Butterfly or Breaststroke if the result is pain and worse still not being able to walk for several weeks.

And it should be remembered that the MD is not a 'licence to cheat.' It seems ironic that a swimmer can have an MD for not being able to comply with the dolphin kick in Butterfly and will be D'q in Breaststroke for using a dolphin kick.

By all means participate in the full AUSSI program and if needed apply for an MD to be considered (the form is quite specific) but don't place yourself at risk or encourage others to do likewise.

Pauline Samson is the Director of Technical Development for AUSSI Masters



Pan Pacific Masters Swimming Championships 1999 - Perth

At the Pan Pacific Masters Swimming Championship in Maui, Hawaii last year, Australia was invited to host the event in 1999.

After a protaracted study of bids from Townsville (Qld) and Perth (WA), the National Board has awarded the meet to AUSSI WA for it to be held in the Challenge Stadium in Perth - home of the recent FINA World Swimming Championships.

The Championships will be held from 16 to 23 October 1999 and the other disciplines (water polo, diving and synchronised swimming) will be invited to be part of it too.(Programme pg 8)

Stroke Technique

Reproduced from the Qld Masters Coaching Newsletter, Issue 12 August 1998

In the late 1920s, Japanese swimmer, Katsuo Takaishi, astonished the swimming world with his new approach to the technique of 'crawl' stroke. The following comments by Takaishi were first published in 1935 in 'Swimming in Japan'. His words are still interesting today and provide swimmers and coaches with thoughts to ponder.

Arm Entry

Takaishi believed that the arm entry was the key to producing an efficient stroke. Moreover, the way a swimmer entered the hand in the water was also an indication of whether or not a swimmer had talent.

"There are few who have the opinion that the pressing movement of the arm at the beginning of the stroke is of no use or can even be detrimental for increasing speed. A good swimmer must learn to press the water skilfully. It is better to let the arm into the water before it is completely extended. If one extends the arm fully before letting it into the water, the time for pressing will be too long."

It was many years (the 1950s) before the swimming world took heed.

Body Roll

At a time when swimmers were urged to retain a flat body position in order to keep resistance to a minimum, Takaishi recommended that "Both shoulders should draw ellipses while swimming. One of them should be lifted when the other is dropped. Accordingly, the upper part of the body should roll to both sides but the position of the body does not change. This movement is called rolling the body and it has a very close relation with the crawl stroke. If one swims without rolling the body on the longitudinal axis, one must swim in a very unnatural position such as pushing the head above the surface of the water or floating the upper part of the body by sinking the legs deeply in order to breathe easily."

Stroke Tempo

Takaishi realised that rolling the body brought into play the large trunk muscles. he said, "If one tries to stroke without rolling the body, the power required is produced only by the muscles of the arms and shoulders, but when the rolling of the body is added to that of the arms, the force will be greatly increased. But one must understand that there is a limit even for rolling, as too much will destroy the form or will slow down the stroke. Rolling the body is necessary and the power produced by it greatly strengthens the stroke when it is combined with the arm movements. This strength is increased according to the degree of rolling, consequently it is natural that the more one rolls, the larger the arm movement becomes. The larger the movement the slower the tempo of the stroke."

Stroke Length and Stroke Tempo

Amazingly, Takaishi probably made the first reference in the literature on the subject of stroke length and stroke tempo. "The best method of speed swimming for a fixed distance is to swim with the largest and strongest stroke and with as high a tempo as possible. However, it is difficult for swimmer of limited power and strength to enlarge his stroke without dropping his tempo. Thus, we must consider the limit of rolling. In considering this it is important to decide whether the rolling suits the swimmer or not, for on this decision rests whether he will succeed. This limit cannot be decided uniformly for every person. It is very difficult to find the limit of rolling which is most suitable for each individual. If one rolls the body too much one is compelled to let the arm stop while pressing on the water before it commences the catching movement." Takaishi believed that the maximum rolling is when the power gained by that rolling is all applied to that arm movement and each arm carries its stroke without wasting time and energy.

Stroke Acceleration

Fifty years before scientific research on the subject, Takaishi appreciated the importance of hand acceleration as an important factor in stroke efficiency. He put it this way, "It is the power of the finishing movement of the arms which actually increases the speed. Consequently, the finishing movement should be done very quickly and strongly."

In his day, Takaishi's ideas were very much scoffed at as they were based purely on his anecdotal records; but science has proved him right. His simple explanations form a very sound base for understanding of technique today. It is a pity that it took so long for others to follow his ideas. The whole history of freestyle records may very well have been different.

1999 Pan Pacific Masters Swimming Championships

Programme of Events

Date	Event No	Event
Friday 15 October		Registration
Saturday 16 October	1	800 m Freestyle
Sunday 17 October	2	200m Individual Medley
	3	50m Butterfly
	4	100m freestyle
	5	4* 50m Medley Relay
Monday 18 October	6	200m Breaststroke
	7	400 Freestyle
Tuesday 19 October	8	400m Individual Medley
	9	100m Breaststroke
	10	4*50m Mixed Medley Relay
Wednesday 20 October	11	200m Backstroke
	12	50m Breaststroke
	13	100m Butterfly
Thursday 21 October	14	200m Freestyle
	15	50m Backstroke
	16	4*50m Mixed Freestyle Relay
Friday 22 October	17	200m Butterfly
	18	50m Freestyle
	19	100m Backstroke
	20	4*50m Freestyle Relay
Saturday 23 October	21	Open Water Swim

Fire and Water

by Russell Ogden (Level 1M Coach)

Learning to Burn

Remember that last 400 or 1500 race or aerobic swim you did? Remember how your arms started to feel like lead? The lead started to melt, then caught fire. You knew you were swimming slower, though you tried not to, and your strokes were becoming ragged. You were suffering **Lactic Acid Fatigue (Acidosis).**

What is Acidosis and What Causes It?

Lactic acid is, in fact, an acid (ph below 7) which accounts for the burning sensation, because acids burn body tissue. It is produced when muscles contract and expand. It is, in fact, a waste product from the muscle fuel source CP + ATP (creatine phosphate and adenosine triphosphate) being burnt.

In the aerobic state, (with oxygen), the body is able to deal with the amount of lactic acid produced and eliminate it. This process can be compared to a well tuned car driven at a moderate pace, thus producing little pollutants (eg carbon monoxide). If the car is driven at higher speed, it uses a greater amount of fuel, compared to the oxygen it breathes. Therefore it produces larger quantities of carbon monoxide and pollutes more.

Our bodies operate much the same. If we attempt to swim at a much faster pace, our muscles require much more fuel and use it at a much faster rate than the blood stream can supply oxygen to the muscles. This is known as the anaerobic state (without oxygen). In this state, our body produces more lactic acid (pollutes more).

The harder we go, the greater the quantity of lactic acid produced, and the longer it takes the blood stream to exhaust it from our muscles. It builds up to levels that cause your muscles to contract involuntarily. Your hand acceleration decreases, your stroke shortens up, your mind becomes filled with doubt, fear and confusion.

Now, you have been training for quite some time and, yet, there are people who can maintain a race pace that you can't even dream of. How will you ever catch up to them? Not by training aerobically! They aren't faster than you because they have more endurance. They swim more efficiently. For the same amount of energy expenditure, they are getting more propulsion with less drag. They also know how to keep their technique together through fatigue, pain and well into agony.

The key to swimming faster is speedwork. Both sprint training and lactic acid tolerance (anaerobic) training. Pure sprint training involves very short efforts under 30 or 40 seconds, with very long rests. The main benefit of sprint training is improved technique while learning to swim fast and smooth. It is best done over 25 or 12.5 metres.

With lactic acid tolerance training, you make your muscles use energy faster than your body can supply oxygen, so your muscles are in oxygen debt and producing lactic acid. Physiologically, your body adapts to anaerobic workouts by buffering the acid so it produces less of a ph drop in your muscles. Thus it increases your body's tolerance to lactic acid. At the same time, you will gain most of the cardiovascular adaptations associated with aerobic workouts.

Done correctly, the mental skills learnt from lactic acid tolerance training may be more important than the physiological adaptations. Repeated forays across the pain barrier can build tremendous confidence. When you're already starting to hurt by the halfway point, there is nothing like being able to say "This is OK, I've been here before. I know I can handle it."

Anaerobic sessions differ from aerobic in that the work to rest ratio is different. The rest being greater than 50% of the work and heart rate is usually greater than 85% of MHR. An example might be 4 x 500 at 85% MHR, with 8 minutes rest. Eight minutes rest may seem a long time but your body needs this to recover sufficiently to maintain a constant heart rate in the next set, without unduly dropping performance. Some less extreme workouts follow.

- 4 x (3x100) swim the first 100 as slowly as you like, concentrating on technique; rest 45 seconds. Start the next 100 slowly, building the pace so as to be sprinting the last 25; rest 30 seconds than swim the next 100 flat out. Rest 15 seconds and repeat the cycle again.
- 10 x (100 hard, 50 easy, 50 easy) swim the 100 as hard as you can; rest for an equal time to the swim. Then swim the 50 on a push off equal to the swim time. For instance, if you swim the 100 in 1.20, rest for 1.30, you will swim the 50's on 1.30 push off.

The main thing is to understand that lactic acid is only the enemy of those not prepared for it. Make it your ally by learning to use it to your advantage. Lactic acid tolerance training should be used wisely. Absolute burn sessions should not be done more than once a week as it can increase the chance of overtraining.

Reprinted with the permission of Russell Ogden (Gladstone Gropers Newsletter)

"THE OLD LOOK TO THE YOUNG FOR STYLE; THE YOUNG LOOK TO THE OLD FOR INSPIRATION".
AUTHOR UNKNOWN

Physio Facts

by Max (the Master)Kavanagh

As a Master's swimmer, I'm aware of the frustration injuries cause and I think coaches can help identify causes and prevent many of them.

Probably the most important factor is understanding the "no pain, no gain" cliche. There is a difference between exercise induced general muscle "stiffness and discomfort" from the "pain" of injury which is usually localised or reproduced with specific positions or movements. Persisting through pain makes injuries worse and more complicated thus complicating rehabilitation.

MASTERS COACHES SHOULD ENCOURAGE SWIMMERS TO REPORT DEVELOPING NECK PAINS OR HEADACHES EARLY SO THEY CAN ANALYSE THE BODY POSITION OR PROGRAM.

Clinically, I see many mature swimmers frustrated with neck problems and headaches gradually worsening as they continue training. The underlying causes may not be obvious. Over the years most people develop a rounding of the thoracic (middle) spine lessening rotation and extension (back tilt). Gradually the neck needs to push to the end of range to look forward and breathe during free, fly and breaststroke. Injuries arise from the repeated strain on tissues and joints. Often pain is initially latent or minor so swimmers may persist or change technique, inadvertently compounding problems.

Kicking with a board or using a pull buoy (which raises the hips) both require increased neck extension, while fins may restrict body roll requiring more neck rotation.

Masters Coaches should encourage swimmers to report developing neck pains or headaches early so they can analyse the body position or program. Injuries may be prevented by mixing training routines, identifying aggravating drills and modifying technique.

Mature swimmers usually need to work on thoracic stiffness with stretching and exercises or may need some guidance from a Physiotherapist if problems become recurrent.

I'll discuss how coaches may incorporate some of these techniques in the next issue.

Move well, stay well.

Max Kavanagh

Max is the principal physiotherapist at the South Brighton Physiotherapy and Sports Injury Clinic in SA. He also swims for Adelaide Masters. Max has volunteered his expertise to write a regular short article each issue. If you have any questions or issues you'd like Max to address in the newsletter please let me (Claire Reaburn 07 49265269) know.

5, 6, 7, 8.

Ballad by Peter Nowlan (Mackay Masters)

Verse 1
It's time to begin the race
The Referee has blown the Whistle
Here we go, count those laps down
5,6,7,8.

Chorus:
My desire to swim a Sub-Six Minute
400m Freestyle is Driving me Crazy
My obsession, to do this causes me
to train each day, Swimming
countless laps of the Pool
Day and night
Here we go, count those laps down
5,6,7,8.

Verse 2
Train Hard, Think Hard, Swim Hard,
You can swim eight laps of the Pool
In under Six minutes,
If you try.
Here we go, count those laps down
5,6,7,8.

Chorus:
My desire to swim a Sub-Six Minute
400m Freestyle is Driving me Crazy
My obsession to do this causes me
to train each day, Swimming
Countless laps of the Pool
Day and night
Here we go, count those laps down
5,6,7,8.

Verse 3
The Starter has fired the gun,
The crowd are yelling and screaming,
Adrenalin is pumping through your body
Dive, Streamline, Tumble Turn, Move It,
Push It,
You feel utterly destroyed, as you start to go faster,
you think you can't go any further, just say to
yourself, I CAN DO IT
and swim those eight laps in under six minutes
Here we go, count those laps down
5,6,7,8.

Chorus:
My desire to swim a Sub-Six Minute
400 m Freestyle is driving me Crazy
My obsession, to do this causes me
to train each day, Swimming
Countless Laps of the Pool
Day and night.
Here we go, count those laps down
5,6,7,8.

Verse 4
I'm going through the Six Minute Barrier Today
Here we go, count those laps down
5,6,7,8.

Chorus: etc

Turns

Reproduced from Queensland Masters Coaching
Issue 10 April 1998

"Just do it" is a well-known motto, but not applicable unless one knows how to "just do it". Did you know that most Masters swimmers could achieve an improved time for a swim simply by improving turns? If you improved a 50 m (short course) by 0.5sec due only to an improved turn, and consistently carried that through in a 1500m then your improvement would be 30 seconds faster.

Turns, or more descriptively, changes in direction, will often be the deciding factor in a race. The proper execution of turns during training sessions is absolutely essential as **perfect practice makes perfection automatic** during competition. To enable everyone in a lane to practise turning, it is important to grade swimmers from fastest down to maintain at least 5 seconds gap between each one. Each swimmer than has the space to practice without being hampered.

In Masters swimming, it is not expected that everyone performs a rapid tumble, (it is not physically possible for some), but everyone must treat the wall as a 'hot spot' and get away from it with speed.

There are three main points on which to concentrate.

Firstly, **change direction efficiently.** This means to touch, fall back or tumble. The fall back turn is simply to touch with the outstretched arm in front, bend it at the elbow while drawing the feet to the wall then fall back into the push off in a streamlined position. Note that as you touch with one hand in front you will already be on your side. The tumble turn does require good flexibility and agility. If tumbling is exhausting, perfecting the fall back is a sound alternative.

> "THE PROPER EXECUTION OF TURNS DURING TRAINING SESSIONS IS ABSOLUTELY ESSENTIAL AS PERFECT PRACTICE MAKES PERFECTION AUTOMATIC DURING COMPETITION."

Secondly, **streamline off the wall.** This means that the body is arrow-like with arms extended, elbows locked while squeezing the ears, head still, eyes towards the pool black line. This can be particularly enjoyable as it is momentarily effortless. At the same time swimmers can travel quickly as resistance is reduced. To achieve this, the swimmer must be completely under the water, minimising surface drag. Streamlining should be just that, no kick, no arm movement. The body is almost horizontal but slightly directed towards the bottom of the pool. Swimmers can be given the opportunity to try different ways of pushing off the wall to get the feeling of how far streamlining can take them.

Thirdly, **surge powerfully into first strokes.** This provides a great advantage over swimmers who don't. From the streamlined hyper-extended position with one hand on top of the other, the first stroke is made with the bottom hand allowing the swimmer to explode to the surface at race pace. There should be at least two strokes before the first breath is taken. Imagine the difference between a few lazy strokes taken after a turn, and the strong, powerful strokes built on top of a fast streamline. Practising these in training develops an automatic habit in the race situation.

Medley Turns

When swimming medley, the turns and touches are where most disqualifications occur. When swimming the stroke use the turns applicable to that stroke eg in the backstroke 100m of a 400m IM, the turn at the 50m will be your normal backstroke turn.

The three medley turns are fly to back, back to breast and breast to free. When changing strokes, touch as if you would be finishing a race in that stroke. For example, in fly to back, touch with both hands at the end of a stroke before pushing off on the back; in back to breast, touch with the hand before turning on the front to swim breaststroke; breast to free, you must touch with both hands on the front before changing direction to freestyle. (Refer to National Rule SW.12)

Note that a semi-tumble from back to breast is not recommeded, as it is too energetic. Watch the elite swimmers. A tumble is very rarely attempted.