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A COACH'S JOURNEY

By Craig Hardy (Level 2 Skills Coach)

At 14 years of age you decide you would like to be a swimming coach. That looks like fun, an exciting way to earn a dollar. As a Swimmer you slowly improve but can't win a race, not even the local under-10's race, and your confidence is low, you consider giving up because you are not enjoying yourself.

All of a sudden, after returning from a break there is a new Head Coach on pool deck. The new coach is young, confident, is innovative, and has new ideas about swimming, racing and training.

The coach is Shannon Rollason (AUS swim coach), all of a sudden you start to enjoy training and all the hard work, and you start to improve as a swimmer but more importantly as a person. It seems now you're the swimming star at school, all of a sudden you are better looking, smarter, wiser, after just one swimming carnival.

As a Swimming Coach you enjoy yourself coaching as an assistant coach at a few clubs, while at TAFE studying. All of a sudden you are in charge of a local swim club Acacia Ridge Swim Club in Brisbane. Instant Success, you enjoy yourself, the kids love you, and the swimmers swim for you. Another swim club, problems with the committee, however still get a girl reserve finalist at states.

Another club, under pressure from committee, not enjoying yourself, starting to get frustrated, not coaching well, slowly learning, (NAQ), nearly qualify for (Nat Open). Another State, another club, now you're really under pressure, starting to lose the plot, coaching badly, too aggressive, too results orientated (NAQ), almost (Nat Open), developing a bad reputation.

Take a risk, change, make a decision to enjoy yourself and totally change your coaching practices and how you deal with people. Suddenly you find constant employment, enjoying yourself again, the swimmers like you again.

THINGS YOU LEARN

1. No matter what a team's, individual goal, it must be balanced, the chase must be fun.
2. Swimming is not easy, neither is coaching, you must work with swimmers not against them.
3. As a swimming coach remember the big picture, not just results, work on the swimmer as a person.
4. Swimmers who say they don't care, or don't want to try, need to work on their confidence, you need to help them and be very positive.
5. Everyone wants to feel important, everyone is trying their hardest with the skills and knowledge they have.
6. Swimming and life comes down to confidence, hard work and persistence while enjoying the journey along the way.

THE REWARD?

What is my reward to trying to improve myself? For trying to find the answers? For trying my hardest.

- Confidence about your ability as a Swimming Coach
- Enjoyment
    - Coaching with Victoria Swimming Elite Sate squads, 2006 Emerging squad, Vic Country squad E.T.C.
    - Satisfaction about helping the swimmers with swimming and other issues

Now … more than ever … I am convinced that I am, I will become an elite swimming coach. I am fully aware others may not have the same view, however that's what confidence is, believing in yourself when nobody else will.

SEEDING

Following a recommendation from its Technical Committee, the Board of Australian Swimming has determined that all events at Australian Championships – **including multi-disability events** – will be seeded under the current FINA Rules. This obviously means that MD events will be seeded on actual times swum and not on performance against classification world records.

I would be grateful if this could be publicised through your usual channels.

The ASI Events Team will ensure that this information is published in all Event Handbooks.

Glenn Tasker

Land Based Exercises for Injury Prevention in a Swimmer's Lower Extremities

By Len Sterlin, Head Coach
Ringwood Swimming Club (Australia)

Sport of swimming is believed to be injury free. However sometimes a swimmer may develop such common injuries as "Swimmer's Shoulder" and "Breaststroker's Knee". The problem can be caused by improper technique related to a strength/laxity imbalance, too rapidly increasing volume, or too rapidly increasing intensity. As we all well know the best way to deal with sports associated injuries is prevention. These common injuries can be avoided by stroke correction as well as specific dry land exercises.

Here I would like to bring readers' attention to strength development and injury prevention of a swimmer's lower extremities. The following land based exercises are quite simple and can be used in any swimming program.

Needless to say that five-minute warm-up jogging followed by proper stretching must precede these exercises.

SPECIAL SWIMMING JUMPING EXERCISES

MULTI-JUMPING

1. Long jumps on the right/left leg for 25-30m
2. Jumps from one leg on the other leg for 25-30m
3. Jumps from the deep squatting position "frog" jumps for 25-30m
4. Long jumps on two legs "starting dives" for 25-30m
5. Diagonal jumps from one leg on the other leg ... ↗ ↘ ↗ ↘ for 25-30m
6. Hurdle jumping for 40-50m

JUMPS ON SPOT


1. Tuck jumps ... 3x10-15
2. Jumps in the deep squatting position ... 3x15
3. Jumps with simultaneous touching feet by hands ... 3x15


4. Jumps on toes ... 3x20-25

Jumps from the deep squatting position upward into streamlined push-off position ... 3x10-15.

WALKING

1. Lunges with squatting in springy way, from one leg on the other leg ... 2x15-20m
2. Walking with extremely high knees lifting ... 2x20-25m
3. Stepping over hurdles ... 2x20 steps
4. Walking in the deep squatting position ... "duck" walking for 25-30m

BENCH JUMPING

1. Multi-jumping over the bench on both legs ... 6-8 series ... ↗ ↘ ↗ ↘
2. Multi-jumping over the bench on one leg ... 5 series on each leg
3. Down-over jumping: from the one bench to the floor and right away over another bench ... 3x10 jumps

BREASTSTROKER'S KNEE INJURY PREVENTION EXERCISES

SQUATTING

Positions of feet and knees...

a) Heels together, toes out ... 30 times


b) Feet closed ... 25 times


c) Feet are on shoulders width 30 times


d) Feet are on shoulders width, knees closed (half squatting) 20 times


e) Feet crossed (half squatting) 15 times, then change feet position and repeat


f) One foot is in front of another (half squatting) 15 times, then change feet position and repeat


g) Toes together, heels apart (half squatting) 30 times


SQUATTING ON ONE LEG

With support 8-10 times on each leg


HALF SQUATTING

Standing and holding on to the wall bars to do springy half squats with bringing knees outwards 15 times


CIRCULAR MOVEMENT

Standing and holding on to the wall bars to do circular movements with closed knees in horizontal plane 8 circles to the each side.

OUTWARD-INWARD CIRCLES

Standing in bend, feet are on shoulder width, hands lean on knees. To do circles with knees in horizontal plane ... 8 circles outward and 8 circles inward

TWISTS

Standing with feet on shoulder width, arms sideways. Twist body with maximum amplitude. Do not move feet ... 8 twists to each side

The number of repetitions and/or series is only guidelines and should be planned by the Coach based on individual athlete's or group ability and fitness level.

It is very important that the swimmers follow correct pattern and not be sloppy on these exercises.

The above exercises are the most beneficial for athletes if done on regular basis.

HEAD COACH DEAFLYMPIC GAMES

Melbourne will host the 2005 Deaflympic Games for deaf and hearing impaired athletes. It will be held from 5th to 16th January 2005.

We are looking for a Head Coach of our national swim team. It will be unpaid position.

Key Responsibilities are:

Prior to the Deaflympic Games:

- Liaise with Deaf Aquatic Australia on various aspects
- Be a member of the Selection Panel to select swimmers for the Australian Swimming Deaflympic Team
- Network and liaise with local coaches on swimmers' progress
- Be prepared to raise funds of the required amount set by Deaf Aquatic Australia (DAA) and/or Deaf Sports Australia (DSA)
- Be willing to contribute in own time – it is an unpaid position

During the Deaflympic Games:

- Liaise with the Swimming Team Manager of team needs or issues
- Liaise with the Swimming Team Manager and other Sports Managers to determine activities to promote positive and healthy team environment
- Devise and prepare training programs and warm-up/down programs – this may involve working with assistant coaches
- Write a brief report, giving general outline on the coaching aspects including suggestions or recommendations
- Contribute to the development of Deaf Sports

Essential Skill Requirements:

- National Coaching Accreditation – Level 2 or Level 2 Performance or Level 3
- Member of the Australian Swimming Coaches and Teachers Association (ASCTA)
- Experience and knowledge of coaching a swimming squad or team
- Experience and knowledge of coaching deaf or hearing impaired swimmers
- Awareness of communication strategies with deaf or hearing impaired people

Desirable Skill Requirements:

- Experience and knowledge of swimming at State, National or International level
- Previous experience of national and international travel

ARE YOU INTERESTED?
Contact Annabel Bishop by Email
swimming@deafsports.org.au
by 20th August 2003

INTERVIEW WITH STEPHAN WIDMER

Head Coach Queensland State Training Centre (QSSC)
Queensland Academy of Sport (QAS)
Brisbane, Australia
By Justin Finney
Pointe-Claire Swim Club, Canada

Stephan Widmer is a 36-year-old native of Switzerland who is now the Head Coach at the Queensland State Swimming Centre (QSSC) at the Queensland Academy of Sport (QAS). Stephan coaches out of the Fortitude Valley Pool in Brisbane and is the coach of 18-year-old Australian Sprint sensation Lisbeth (Libby) Lenton, who recently set the Australian National Record in the 50m Freestyle Long Course with a 24.92 and Casey Flouch, who qualified for the 4x100m Freestyle Relay. I had the opportunity of spending time with Stephan and his program at the Gold Coast. His path to coaching success is very interesting and shows that perseverance and belief pays off.

Stephan's background in swimming was extensive. He began coaching in Switzerland in 1993 at age 26. By 1996 he had his first Swiss Olympian in Dominique Diezi, a specialist in the 50 and 100m Freestyle events. Atlanta was just the beginning. Stephan wanted to travel the World for a year. His travels however were not just for sight seeing. Stephan wanted to travel to the best swimming programs in the World and learn from World Class coaches and develop his coaching knowledge.

Stephan planned on spending six months out of his year of travels in Australia and out of those six months he wanted to stay at least three months in one program. Out of the two contacts Stephan had in Australia one of them was Scott Volkers. So one day Stephan shows up on deck at Scott Volkers' afternoon workout and attends for two weeks straight. After a few days, Scott and Stephan got to talking more and more about coaching swimming, technique and their swimming philosophies and realised that they had many coaching philosophies in common. After those two weeks Scott Volkers asked Stephan to be his Assistant Coach. Stephan only accepted a three months contract, as he wanted to continue on his travels after that amount of time.

During that three month contract Scott was in a 7-week phase where he was travelling for six of those seven weeks with then World-class Breaststroker Kristy Ellem for her preparation for the 1997 World Short Course Championship. Stephan was left with two swimmers – Olympic Champion Susie O'Neil and World Record Holder Samantha Riley – and with two hand-written pages from Scott about what he could do with the program. The workouts and training preparation of these two World Class swimmers and the rest of the squad were left to him.

After seven weeks, Stephan had Sam and Susie swimming best training times with Sam getting down to a 2:23 Short Course 200m Breaststroke in workout. Over those seven weeks he gained the respect and trust of the athletes, which to Stephan is one of the most important factors between the coach and swimmer. Stephan stayed an extra month with Scott's program and then continued on his travels through Asia and then returned home to Switzerland, not quite sure where his coaching would lead him. Within the first few weeks of his return Stephan got a phone call from Scott informing him that there was an assistant head coaching position opening at the QAS. Scott was wondering if Stephan would like to apply for the job. After a phone interview with a QAS specialist panel – including Alex Baumann – Stephan Widmer was on a plane back to Australia five days later to become the Queensland Academy of Sport Assistant Coach.

By the Short Course Championships in 2000 Stephan had a stable of incredibly fast and talented swimmers under his care. He had Backstroker Beau Mannix (50m Backstroke 24.44; 100m Backstroke 53.40; 200m Backstroke 1:56.81), Australian Short Course Sprint Record holder Michelle Engelsman (50m Freestyle 25.36) and middle distance specialist Nicole Zahnd (200m Freestyle 1:59.56; 400m Freestyle 4:08.92). Stephan also had 14-year-old Australian Olympic Youth Festival Representative Marieke Guehrer (50 Freestyle 26.21).

After the Olympics in 2000, Don Talbot, Head Coach of the Australian National Team, wanted Scott Volkers to become a mentor to the Queensland coaches and Stephan to continue building a High Performance Centre under the QAS program. Stephan had to re-apply for the position as it was posted throughout the coaching community in Australia and successfully got the job. For a year and a half Stephan was never officially named the Head Coach of the Queensland State Swimming Centre at the Queensland Academy of Sport. Finally in 2001 Stephan officially got the job

until December 2004. His description was as follows...

1. Head Coach of the Queensland State Swimming Centre (QSSC) providing a High Performance Training Program designed and implemented in line with both the QAS Swimming and the National program.
2. Maintenance and further development of a support network for the QSSC Squad ... National High Performance Director and Head Coaches, QAS Head Coach Swimming and Queensland Director of Coaching.
3. Work with identified Queensland swimmers and their coaches, providing them with exposure to latest techniques, training methods and strength and conditioning programming in conjunction with QAS Strength and Conditioning Coordinator, Physiotherapists and QAS Head Coach.
4. QSSC Administrator ... management of administrative and financial aspects.
5. Professional liaison with the QAS ... Performance Enhancement Centre (sport scientist, physiologist, biomechanist, psychologist and Strength and Conditioning Coach, physiotherapist, massage therapist), and the QAS Program Manager.
6. Training and Race Analysis, Complex Performance Diagnostic for QSSC program.
7. Maintenance and further development of contacts to Queensland Swimming and its Level 1 Coaches Education.

Stephan has a Bachelors of Education in Human Movement Studies. At the Swiss Federal Institute of Technology in Zurich he chose subjects that would benefit him in his quest to become a professional swim coach. He studied sports such as Track & Field (Physiology of running events and strength training), gymnastics (motor learning and strength training) and swimming as well as anatomy, physiology, biomechanics, nutrition and psychology.

In 2003 Stephan was named to the coaching staff of the Australian World Championship Team for his accomplishments with sprinters Libby Lenton and Casey Flouch.

Stephan's approach to coaching the sprinter is a systematic one. He breaks down the pool into a series of numbers and relies heavily on the feedback from the QAS Biomechanics Team to aid him with their efficiency through his system.

Here is how his series of numbers system breaks down...

1. Preparation behind the blocks
2. Position on the block
3. Reaction off the block
4. Flight time and position in the air
5. Entry into the pool off of start
6. Underwater work/position
7. Break out
8. Swim phase/race specific speed and efficiency
9. Approach to turn
10. Turn phase/positioning on wall
11. Push off of wall and underwater work
12. Break out
13. Swim phase/ race specific speed and efficiency
14. Finish

Stephan created a simple plan that is very systematic, efficient and easy for his swimmers to understand. Stephan also recognises that each of his swimmers is an individual. They all require different attention and need to be dealt with on a daily basis. Let's use, for example, the different approaches between female Freestyle and Butterfly sprinter Libby Lenton and male Freestyle sprinter Casey Flouch.

When Stephan started coaching Libby Lenton in October of 2002 she was only training a handful of times per week, which simply was not enough. If Libby wanted to be part of the QSSC she had to train 10 sessions a week ... no matter what ... and Libby accepted! The next part was to clean up her stroke timing as she had a catch-up stroke, which needed work. Stephan also spent countless hours giving Libby the self-confidence and belief in her abilities which were two key factors that she needed to improve on in order to attain the International Sprinting level. His work with Libby has paid off with her Australian Record in the 50 Freestyle at 24.92 (LC) and her 100 Freestyle time of 54.71 (LC) ... both World Class times.

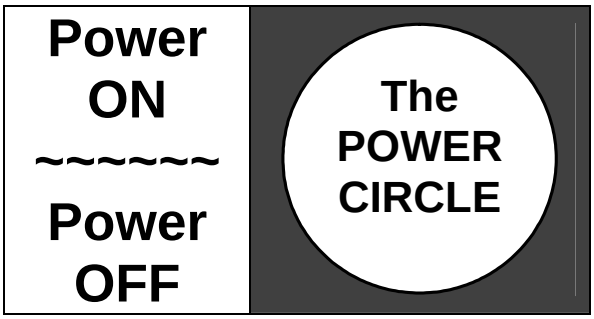
Casey Flouch, however, had been in the program since Stephan first started there in 1997. Casey was Susie O'Neil's training partner

leading into the Sydney Olympic Games, where she used to go head-to-head with him on a daily basis. Susie almost fell off her chair when she saw Casey marching on for the Final of the 100m Freestyle at the 2003 Australian World Championships Trials. She never thought he would make that far. Casey's determination and belief in himself has been the key to his success. He has a straight-arm recovery due to the lack of flexibility, which does not allow him to get into a high elbow position underwater. Yet that has not stopped him from believing in himself and the coach whom he has been with for the past six years. His perseverance has put him in good company on that 4x100 Relay with Todd Pearson, Ashley Callus and Ian Thorpe – all three of them are Olympic Gold Medallists.

The QSSC is a high performance squad with only 10 swimmers based in Brisbane. Here are some of the results of the Stephan's swimmers from the recent Long Course season...

Girls (Long Course)	Boys (Long Course)
LENTON Lisbeth (18 years) 50m FR 24.92 100m FR 54.71 200m FR 2:02.72 50m Fly 27.24 100m Fly 59.78 50m BK 0:29.63	FLOUCH Casey (21) 50m FR 0:23.24 100m FR 0:50.20
GUEHRER Marieke (17) 50m FR 0:26.24 100m FR 0:57.07 50m Fly 0:27.43 100m Fly 1:02.95 50m BK 0:30.22 100m BK 1:04.67	LYONS Leif (16) 100m FR 0:53.03 100m Fly 0:57.54 50m BK 0:27.70 100m BK 0:58.54 200m BK 2:07.26
HORNE Kellie (14) 100m BR 1:16.46 200m BR 2:41.13	PIPER Sean (20) 50m FR 0:23.12 100m FR 0:51.12
THOMPSON Stephanie (18) 50m FR 0:27.19 100m FR 0:58.42 200m FR 2:03.93 400m FR 4:22.79	SPRENGER Christian (17) 50m BR 0:29.33 100m BR 1:02.82 200m BR 2:20.70
	THOMPSON Andrew (16) 50m FR 0:24.10 100m FR 0:52.31 200m FR 1:52.13 400m FR 3:59.97 1500m FR 15:52.45

One thing that I have realised throughout my time spent with Stephan Widmer is that he has an extreme belief in what he does as well as a great respect for the coaches and swimmers around him regardless of level. His warm ups and swim downs in workouts are specifically devoted to technique. He has drills and exercises in place to work on developing his swimmers technique, efficiency and fitness, which will allow them to maintaining their speed at the end of their race. He keeps stimulating his swimmers brains with a variation of drills. Most of all his swimmers are responding.



By Wayne Goldsmith

There are two key phases in all swimming strokes ... the work phase and the rest or recovery phase.

In the work phase, when the arms are applying force to the water, muscles are working hard to propel the body through the water. Generally the arms and hands are moving backwards – i.e. towards the end of the pool you are swimming away from.

This feels like you are **pushing** the water backwards, but you are actually pulling your body forward. Ideally, the hand will scull in the same plane with the body moving forward past the hand.

In the recovery phase, arms are moving forward in the direction of the end of the pool you are swimming towards. In Butterfly, Backstroke and Freestyle the arms are recovered out of the water and in Breaststroke (for most swimmers) arms are recovered just under the surface.

Think about that word **recovery**. It means rest. It means restoration. It means take a break. It means turn the power off and prepare for the next stroke. Recovery is in many ways just as important as the work part of your stroke.

The POWER CIRCLE Concept

The Power Circle explains how work and recovery interact to help you to swim fast.

When your arms are working hard ... TURN THE POWER ON. When your arms are recovering ... TURN THE POWER OFF.

When your arms are working, concentrate on great technique, high elbows, correct sculling and smooth hand actions. Then when you have finished working, TURN THE POWER OFF again during recovery.

This is particularly important when swimming Butterfly.

Young swimmers often struggle to swim Butterfly repeats longer than 25 metres. They mistakenly believe that the reason they struggle is due to a lack of strength or fitness.

One of the main reasons long Butterfly repeats seem tough is that swimmers don't turn off the power in recovery – they keep working their arms and tiring their muscles even when they are in recovery (i.e. when their arms are moving forward out of the water).

In other words, their POWER CIRCLE is POWER ON, POWER ON, POWER ON, POWER ON … they are not recovering!

To ensure that the work phase in your stroke is effective, it is essential that you learn to stroke correctly and apply force to the water at key points in your stroke.

Current thinking in swimming and underwater stroke power tells us that the best swimmers reach out long, catch the water, **hold the water** right to the end of the stroke, release and then recover.

You can practice this by remembering the three power tips…

When applying force in Freestyle, Breaststroke and Butterfly.

- Fingers pointing to the bottom of the pool
- Elbow pointing to the side of the pool
- Back of your hand facing the direction you are going

In Backstroke this is changed around…

- Fingers pointing to the side of the pool
- Elbow pointing to the bottom of the pool
- Back of your hand facing the direction you are going

Underwater film of the best swimmers in the world taken at the Olympics and World Championships gives us the answers we need. Looking from front-on (i.e. with the swimmers moving towards the camera) you can observe the back of the swimmers' hands when they are stroking and see the back of their hand all the way through their underwater pull.

By keeping their hand in that position (with the back of their hand facing the direction they are swimming), the swimmers are able to keep constant pressure on the water (i.e. feel the pressure of the water on their palms) and keep pushing the water backwards (pulling their bodies forward).

However, this constant pulling force is far more effective over the duration of the race if you also practice to rest and relax during your stroke recovery phase.

Power on when pulling, Power off when not. Turn the power on when you need to. Turn it off when you don't. It's a simple way of improving stroke through saving energy and relaxing your muscles when you don't need to use them.

Why does it work?

1. By resting your muscles during recovery, your body uses less energy overall and using less energy means you have more left when it really counts – the last 10 metres of your 100, the last 25 of your 200.
2. There are basically three different types of muscles in your body. The ones that work, the ones that rest and the ones that support the others. The aim in being efficient is to learn how to work the **workers**, rest the **resters** and allow the **supporters** to support without over-stressing them. Recovery is all about being able to rest muscles when they are not working and not getting the **supporters** involved in the swimming action so they can keep doing their support job.
3. It is logical. Muscles help move your body through the **WATER**. They don't need to help you move through air! Why waste effort and energy working those muscles hard when they are out of the water recovering?
4. It is a great mental technique because it gets you to focus on the feeling of resting and recovering and helps you to stay relaxed right through your races.

And the best part!!! Learning to recover and to turn the power off means you will learn to swim faster, swim faster for longer and have more power left for the last part of the race when it really matters.

It doesn't require doing more training, or more laps or eating special foods or buying special equipment. The **POWER CIRCLE** concept means you swim fast by doing less – i.e. learning to rest your arms when you are recovering! Who says you can't get something for nothing!!!

Tips for developing the **POWER CIRCLE**...

1. In Butterfly, try the POWER CIRCLE chant. When you pull say to yourself POWER ON. As your fingers leave the water to recover, say POWER OFF. You will soon develop a rhythm of POWER ON-POWER OFF – POWER ON-POWER OFF, which not only reminds you to use the Power Circle correctly but helps you develop a nice stroke rhythm as well. This rhythm, in turn, helps you to develop a long, relaxed stroke.
2. Try some slow (very slow) swimming with a deliberate, purposeful POWER ON – POWER OFF approach. Initially, you may have to use fins to maintain momentum. In Freestyle, try reaching out long and tall, catch the water and feel the pressure of the water on your palm. Think POWER ON and pull your body forward with power and strength. Then, as your fingers leave the water to recover, think POWER OFF and relax your arms, fingers and hands as you reach forward for the next stroke.
3. Imagine there is a big **ON** button just out in front of you as you swim. With each stroke, reach forward, feel the water, then get your elbow high ready for the catch. As you catch the water, imagine your hand is pushing the **ON** button.
4. Use an exaggerated one-arm drill in Freestyle, Backstroke and Butterfly where you feel a long, easy, relaxed recovery with each stroke. This works particularly well with an exaggerated straight-arm recovery when doing one-arm Freestyle and Butterfly drills in training.
5. Think of **CUES** – words like easy, smooth, relax, long, etc., in recovery to teach your brain to turn off the power.

- Work when you have to – rest when you can,
- This is the way to be the best in the land.
- Turn the power on when your arms are in the water,
- Turn the power off when your arms are out of the water (or moving forward).

Learn to use the POWER CIRCLE – it really works.

GLYCONUTRIENTS

"THE MOST SIGNIFICANT HEALTH DISCOVERY IN MODERN NATURAL MEDICINE"

Read on to find out more about how you can achieve Optimal Health and Well-Being for yourself and your family with Glyconutrients – now available at your Swim School.

Introduction...

As a part of our Healthy Lifestyle Program Swim Australia and your local Registered Swim School are now distributing a new range of food supplements (called glyconutrients) from Mannatech that many renowned scientists and researchers have referred to as *"A new frontier in modern natural medicine"*.

Our research into the product efficacy reinforces that claim; in fact, we believe these products are the **best** food supplements available in the world today. That's why we are recommending them to you. Let's us briefly explain why.

Why there is more sickness than ever before...

Six out of ten causes of all deaths are diet related.

Right now Australia is the second fattest country in the world behind the US. It's little wonder when we are eating more processed foods, exercising less, suffering from increasing levels of everyday stress and anxiety and are constantly exposed to a huge array of new toxins and pollutants.

Throwing money at producing new drugs doesn't appear to be working – the United States spends over $1.3 trillion per annum on health (actually sickness) and every disease category in every sector of the community is on the rise. The same is true for Australia – we are facing a health crisis.

Why we can't eat well...

Research has proven it is **NOT** possible to get the nutrition we need for optimal health from available food sources.

The common practice of **green harvesting** from depleted soils robs our food of phytochemicals, the essential nutrients we need which are provided in vine-ripened plants through photosynthesis.

The consequence? Our immune systems are breaking down...

It has been scientifically proven that this lack of essential nutrients is a key contributor to the continual breakdown of our immune systems and thus the increase in disease.

Recent research has shown our systems are breaking down by 2-3% every year. For the average person, over the next 15 years, that represents a deterioration of between 30-45%. With a poor line of defence like this the door is open for disease to ravage our bodies.

A revolutionary totally natural solution ... without equal...

An outstanding solution to reverse this deterioration, known as Glyconutrients from Mannatech, has been proven to be **absolutely essential** for optimal health and well-being. Scientists in the field of Glycobiology (Note:

Four of the last eight Nobel Prizes for Medicine have been awarded in this area) have discovered that eight essential Glyconutrients play a key role in accurate cellular communication, which is absolutely critical in maintaining and building healthy immune and hormonal systems.

When this happens the result is that the body functions the way it was designed ... to fight disease and heal and nurture itself.

No other food or vitamin and mineral supplement on the market today can achieve this...

Of the eight essential Glyconutrients required it is only possible to get **TWO** from current food sources – glucose and galactose.

This means our cells are not currently getting what they need, are not communicating their needs effectively and therefore making it easier for sickness and disease to enter and flourish.

This will remain the case unless we are getting the right food supplements daily.

Patented Ambrotose from Mannatech is the only product IN THE WORLD that offers all eight essential Glyconutrients in one easy consumable form so the body can effectively defend, regulate, nourish, repair and cleanse itself for optimal health.

Don't wait until you are sick to focus on your health...

It is a fact that people spend more in the last two years of their life to stay alive than they do in their entire life to stay well.

If you treasure your health and the health of your loved ones then please don't wait until there is sickness before you act.

Other outstanding products...

Mannatech also have a sports performance series (used by Athletics Australia, USA Track & Field, Canada Athletics and many other professional athletes with the NBA, NFL and Major League Baseball), a weight loss program, a product that fights the effects of hay fever and influenza and an anti-stress product.

There is also an incredible product called Phyto-Bears that will supply a day's total nutritional requirements for your child in just two chewy, fun, bear-shaped sweets – an absolute must for kids who never seem to want to eat their vegies.

We hope this information will help you to make an informed decision about whether you would like to include these outstanding products as a part of your family's journey to optimal health. If so, we are happy discuss which products will suit your needs and then arrange for the no-fuss delivery to your home.

WE HOPE THAT YOU AND YOUR FAMILY LIVE LONG, HEALTHY AND HAPPY LIVES

NEWS FROM DEAF SPORTS AUSTRALIA

By Annabel Bishop

DEAF SPORTS AUSTRALIA'S OFFICE

1. Deaf Sports Australia (DSA) has moved! Please feel free to make a time to drop in and see the new office/building. It is lovely. The new address and contact details are...

   Deaf Sports Australia
   Level 3, 340 Albert Street
   East Melbourne Vic 3002
   Voice/TTY: (03) 9473 1191
   Fax: (03) 9473 1122
   Email: dsa@deafsports.org.au

2. DSA is totally swamped with work and doing the urgent things first (there are lots of them!). If anyone is waiting for DSA's reply to your emails, please be patient as DSA will get around to it eventually.
3. DSA is in the progress of updating its website. Your ideas are welcome, please send them to DSA.

DSA'S EXECUTIVE OFFICER IN SYDNEY

Jacinta Baldwin, Executive Officer, was in Sydney last week on Thursday 3rd July and Friday 4th. She met with several organisation and people whilst in Sydney.

2005 DEAFLYMPIC GAMES

1. **Australian Team Manager** – DSA will employ a full-time Team Manager for the 2005 Australian Team. It will be a contract position to start ASAP and finish early March 2005. The Australian Team Manager will be responsible for **EVERYTHING** to do with getting the 2005 Australian Team ready. DSA is in progress of preparing a position description and application procedure etc. It will be ready very soon.
2. **Fundraising** – please start! DSA is trying to obtain funding and sponsorship for the Australian Team because it is endeavouring to make things easier and cheap for you to participate at 2005. DSA is also planning some fundraising events, but you should still start fundraising ASAP. If you are in the national squad, you will need to raise some money for 2005. DSA apologises for not having a final amount as yet, but it is not really important. You still need to make a fundraising plan for the next 12-18 months because all team members will need to pay something.
3. **2005 Deaflympic Games Website** – there have been a few unexpected delays, but M2005 Organising Committee hope that it will be ready sometime soon.
4. **2005 PR Materials** – DSA have 2005 posters, brochures, business cards, etc. If interested, please contact DSA.

AUSTRALIAN SPORTS COMMISSION

1. **2003 International Competition/Training Funding**

   DSA submitted for funding/grants and to date, application outcomes are not known. Keep your fingers crossed.

2. **Project CONNECT Application**

   Unfortunately DSA was not successful with its application for this year. However, DSA is still working with the ASC and mainstream National Sporting Organisations for preparation toward 2005 and other competitions.

LEGACY PLAN

DSA is working very hard on a joint project with M2005 Organising Committee. Here is a summary of the goal of the legacy plan...

The DSA/M2005 legacy plan is a scheme designed to make sure that the 2005 Deaflympic Games provide a long-term benefit to deaf sport in Australia. The Deaflympics are exciting for their own sake, but we recognise that a very important result of conducting a strong event has to be a long-term benefit to deaf sport. Therefore, the goal of the legacy plan is to improve sporting opportunities and performance for deaf people in Australia after the 2005 Deaflympics.

DSA have produced a great draft document in the past four weeks. It will continue to work on the draft and make a legacy plan for deaf sport after 2005.

That's all from DSA.

The faster you want to go … the more relaxed you have to be

By Wayne Goldsmith

Swimming is a simple sport ... jump in at one end and get to the other end before anyone else.

In the most basic analysis, it's a game of speed. Speed is the most crucial element in the sport. It's fundamental. The swimmer who swims fastest, wins the race.

But is it really that simple?

We know from biomechanical analysis of champions at major swimming competitions that the fastest **swimmer** does not always win. Sometimes the fastest **swimmer** … i.e. the person with the highest swimming speed … loses the race because of inferior skills, turns, starts and finishes. We know sometimes the fastest swimmer does not win because they were not mentally focused in on the task.

In the end however, skills, fitness, mental attitude, flexibility and all the other elements of the sport come down to one question … how fast can you swim? What is swimming speed?

Technically, it is the velocity that your body moves through the water.

If you ask a little kid to swim as fast as they can, they throw their arms and legs as fast as possible with lots of **effort**, but without much **speed**. They grit their teeth, tighten their arms, hold their breath and generally fight the water. They make lots of splash … but not much dash! There is a difference between **effort** and **speed**. Great swimmers often report that when they experience **REAL SPEED**, it seems to come with little **EFFORT**.

When the South African Breaststroke swimmer, Penny Heyns, broke the world records for 100 and 200 metres. She commented…

"When I touched the wall I thought, maybe a 2:30, and this felt too easy for that. I really don't know what happened."

Australia's own Grant Hackett was interviewed after his amazing world record effort over 200 metres Freestyle, and said…

"I certainly hadn't prepared to break the world record – I was having pillow fights with Ky Hurst and the rest of the team before the race."

And it goes on.

"The swim itself just happened, just like Gennadi (coach) said it would, without really forcing it."

Michael Klim's comments after his World Record 100 Butterfly swim.

When it all comes together, and swimmers feel real speed, it seems to come with little effort. On other occasions, swimmers have reported feeling heavy, slow and sluggish, busting their guts and giving 100% **effort** – but have swum slow times. What is the difference between **EFFORT** and **SPEED**? Speed and relaxation appear to be somehow linked. It seems weird, but in many sports where excellence is measured in terms of how fast an athlete can move, the champions consistently say that their best performances have come when they were at their most relaxed.

When at his peak, multiple Olympic Gold Medallist sprinter, Carl Lewis, was an unbeatable athlete who understood speed as much as anyone. When asked about Lewis' success, his coach remarked, *"the faster you want to go, the more relaxed you have to be"*. The question then is … can you learn to relax when trying to go fast?

1. Long, easy, even paced, even tempo swimming helps develop a sense of **rhythm**. Being in a swim rhythm is a comfortable feeling that helps develop **relaxation**. When arm stroke, kick and breathing are in a coordinated rhythm, real relaxation in the water is possible. From there, it is possible over time to learn to stay relaxed at faster speeds. Learning to relax at slow speeds first is the crucial step.
2. Swim techniques and drills have been developed to decrease the resistance your body experiences when swimming. Developing technical excellence means you move through the water with less effort.
3. Work on MDS or DPS (Maximum Distance per Stroke or Distance per Stroke) skills as a priority. The best swimmers in the world are able to maintain long strokes at top speed, when tired and under pressure. It all starts with learning to swim with less strokes in training. In warm up, try counting stokes on the first lap. Then aim to take one stroke less on the next lap –and so on.
4. Try the MINI-MAX workout (**Minimum** Strokes, **Maximum** Speed) used to great

effect by Bill Sweetenham. Count your strokes on your first 50 metres. Accurately note your time. Next, add the number of strokes to your time. For example, if you take 50 strokes and swim 45 seconds for the lap, your lap score is 95. Aim to swim a lap score of 94 on the second lap, which means you need to either swim a little faster, or stroke a little longer. Continue the process six times. Fewer strokes is good. Faster speed is great. Fewer strokes and faster speed is best.

5. Work on keeping strokes long and strong at training. In every effort ask yourself *"Could I do this with fewer strokes?"* When doing skills work like drills aim for technical perfection, then technical perfection with the minimum number of strokes and finally, technical perfection with a minimum number of strokes at maximum speed.
6. Develop real speed by thinking about swimming FAST rather than trying too hard and increasing effort during your speed. Train fast to Race fast.
7. Every turn in training is a race turn … every dive is a race dive. Every finish should be completed on the wall with power and controlled aggression. Train as you would like to race.
8. Drills should be completed with precision and with 100% concentration. Think technique first at all times.
9. Challenge yourself to swim fast when tired. In training, challenge yourself to jump up at the end of the session and swim fast. When racing, challenge yourself to swim fast when tired, to swim fast heats in the morning then faster finals at night, to swim as fast on the last day of the meet as you did on the first day, etc.
10. Learn to enjoy pressure situations. Being nervous is a sign that something great is about to happen. Your body is getting ready to do something brilliant. Learn to enjoy the pressure of competition.

Part of the process of understanding the difference between **effort** and **speed** comes during **TAPER** – that period of time when you are freshening up and resting in preparation for a competition. Swimmers will often say that during a taper they feel **light**, that training efforts **felt easy** that they feel like they are swimming **on top of the water**.

This feeling, where speed comes with little effort, is an indication that you are ready to race and that your taper has worked well.

It also comes from listening to your coach and working with him or her in your fast work. If your coach uses the expression, **MAXIMUM EFFORT**, your swimming response should be …

"I will do this at maximum speed, while staying relaxed and loose, with minimum strokes, great skills and technical excellence".

If it's speed you need
You need speed indeed
And you need some dash
Without splash or trash
Just keep your cool
In the swimming pool
Stay relaxed and loose
And you'll make the news

How to create "FLOW STATE" swimmers

By Anita Iossifidis (Killmier), Dip. T.: Level 2 Coach (Owner H^2O: Swimming Works)

INTRODUCTION

Flow State or fluid swimming is a highly elusive quality that is rarely found even amongst the top competitive swimmers of today. It occurs when body and water are in a combined state of perfect balance and harmony. The water **opens** and flows smoothly past the swimmer enabling him to slip through in the most efficient, almost effortless manner.

Few competitive swimmers will master this in all four strokes, let alone one stroke or even part of one. Every movement made serves to unbalance the swimmer so he is in a state of constant flux. A swimmer may be well balanced while lying prone, but every time he rotates or breathes in Freestyle it will serve to unbalance him. Hence he learns to compensate for this feeling of instability by adopting alternative strategies, which are probably not the best ones. Crossing the feet when turning to breathe is one such strategy; turning the head rather than rotating the whole body when breathing is another. He may still become an extremely good swimmer even with these stroke/balance imperfections. Indeed, many coaches would allow such deviations to go uncorrected. There is a school of thought amongst coaches that a swimmer should be allowed to develop their **natural** stroke. However, I hope to convince you that we are in fact doing our swimmers a disservice if we adopt this attitude.

At the elite end of the spectrum, coaches are placing more emphasis on core body strength. Physiotherapists have been telling us for years that shoulder injuries are caused from poor posture not just on land but also in the water. It is only very recently that we are beginning to

truly understand the effect that posture has to our balance in the water mainly through the work of Bill Boomer. Posture is all about body alignment and the better aligned our body in the water, the better balanced we will be. Swimmers are notorious for their bad posture and by the time they reach their late teens, are firmly entrenched in their habits. Core bodywork may serve to strengthen and improve this, but in reality, we should be addressing the problem from early childhood.

There is a great need therefore for coaches to get involved in teaching, to ensure that swimmers moving up into their program have come with a sound base. Both teaching and coaching are inseparable, but unfortunately, many coaches are not interested in the lower end of teaching and many teachers are content just to get a swimmer to be able to swim competently enough to save themselves in an emergency. Every parent starts their child in a Learn-to-Swim program with this aim. Few would take their child to swimming lessons believing they have a budding Olympian. But, if we are to continue to develop great swimmers as I nation, I believe that coaches and teachers will need to work more closely together. Teachers will need to have a greater understanding of the swimming continuum and their role within, and coaches will need to take a more active part in learn to swim to ensure the foundations that are laid have the quality and detail for future success. Teachers should understand that their charges may move into squad or competition and have an obligation to get the foundations right rather than compromising them and rushing through for short term results to keep a parent happy.

The Teacher is involved with BUILDING the stroke
The Coach is involved with REPAIRING and REFINING the stroke

PART ONE

In all teaching and coaching, of prime consideration is the detection and correction of stroke faults. My philosophy however is that we should build strokes that are so good from the outset that we don't need to correct them at a later stage of a swimmer's development. This will then free the coach to be a **refiner** and allow him or her to get on with the job of extending the swimmer, rather than be caught up in the lengthy and time consuming task of breaking old habits and re-establishing new ones.

Of course every swim school varies at what point in time a swimmer graduates to **squad** and to a coach-based program, rather than a teaching-based program. Some squads have no feeder program or little control over the quality of swimmer moving into their squads. This I believe is a huge mistake.

At H^2O, we keep children in our Learn-to-Swim program far longer than most in order to consolidate their technique. That way we refine them in small groups and have them quite technically proficient before we begin the task of building endurance. Too often, kids move to a squad-based program when they only have one or two very basic strokes. They begin to swim increasingly greater distances and probably perform many drills, but how much quality stroke teaching and refinement is really accomplished in these larger groups? Swimming greater distances badly only reinforces and ingrains bad technique.

The children that do usually become technically proficient only do so because they are naturally talented, better co-coordinated or faster learners than the rest. They probably improve **despite** the coach, not **because** of the coach. Some are fast at an early age even with poor technique because they are stronger and bigger than their peers – also rarely due to the coach's influence. They frequently drop out when that early success cannot be repeated at a later age when their technical proficiency (or lack thereof) begins to tell. Those with superior technique usually overtake them somewhere in their teens. Discouraged by the lack of success, the rest fall behind and invariably drop out of the sport.

Surely, it is our responsibility, our duty, to enable all swimmers in our charge to be the best that they can be by providing an environment in which they can excel. Only by constant attention to detail, minute-by-minute, session-by-session, week-by-week, year-by-year can we help our swimmers fulfil their potential whatever that may be and however far it may take them. By raising the ceiling and demanding a higher standard of excellence from our swimmers (irrespective of their age or ability), everyone will find their own level of competence. Lower the ceiling, demand less and the better swimmers will go elsewhere.

Naturally, what you expect of a seven-year-old will differ to that of a teenager or a mature elite athlete, or even a master swimmer who may have physical constraints. None-the-less, I can easily get my squad of 8-10 year olds with perfect streamlining (for example) off every wall, every lap. We begin the habit of streamlining in our first level of Learn-to-Swim. All teachers reinforce the message at every level up the line, so it is easy once they enter squad. It is not that difficult to achieve, and if I can develop that

habit at an earlier age, how much easier will it be when they are 16, to be able to hold their streamline off every turn in the crucial closing stages of a race? Much easier because they have been doing it for half of their lives and are well conditioned to do so.

But even this will only be moderately successful unless the teachers throughout that swimmers career **ALL** consistently reinforce the message that pushing off **CORRECTLY EVERY TIME** is an unconditional given. It is a truism that a swimmer will always revert back to their worst habits under the duress and fatigue of a race. Allow bad habits to flourish in training and your swimmers will be outclassed when it counts.

The secret is giving the swimmers the right incentive to **want** to do it properly every time, because if they don't there will be a consequence. They will quickly learn that it is better to do it correctly rather than risk the wrath of the teacher/coach and perhaps have to start over. It is just as easy to develop a good habit from the outset, than to allow bad habits to flourish – simply by the way you teach or coach and the expectations you have of your swimmers. I am not talking about fear-based coaching, rather, with a sense of humour, a little flexibility, but a firm approach. If you make each swimmer accountable for their actions to every other swimmer in the squad, they will quickly learn to do the right thing. This also has the flow on benefit of building team unity. Any swimmer who does not streamline off the wall makes the entire squad or lane begin the repeat again until they can all do it correctly **every** time. If they do it correctly from the outset, they don't do as many repeats - kids are quick to see the sense in that!

While it may seem a little harsh, I am continually disappointed by the standard of coaching I see both within Australia and the numerous countries I have visited. Every book I read or course, clinic or conference I attend reinforces the necessity of technique, technique, and technique. Most would agree that talent and hard work will often result in top class swimmers; but talent, hard work and outstanding technique is the magic combination that can produce greatness. Why then do so many coaches play only lip service to developing it?

Are coaches of swimmers at such a tender age really coaching, or are they teaching? Should they have a coaching qualification or a teaching one? It is my belief that the transition from swimming lessons to squad in the majority of programs is still more teaching based and therefore Australian swimming in general would benefit by having the AustSwim Teacher of Swimming and Water Safety certificate as a pre-requisite to the Level 1 Coaching certificate. There is not a single coach who would not benefit from a background in teaching first. I would also argue that unless you come from a competitive swimming background, most swimming teachers would also benefit from having some coaching experience so they understand what skills are needed higher up, and what foundation they need to lay should children decide to pursue swimming as their chosen sport.

When learning any skill or technique, the learner generally goes through 3 well-identified stages...

1. The Beginning or Cognitive Stage
2. The Intermediate or Associative stage
3. The Advanced or Autonomous stage

1. THE BEGINNING OR COGNITIVE STAGE

When introducing any new skill, the swimmer's first few attempts will often be jerky and ungainly and a large numbers of errors frequently occur. **Visual** displays and feedback where the learner can use **sight** or **touch** will yield the best result, as the swimmer's other senses will be less reliable. The swimmer will have trouble coping with both the movement and adjustments through coach feedback. Often it is best to allow the swimmer to practice without interference until he has some mastery and moves into the next stage. Take the skill of breathing on Freestyle, which requires a great deal of coordination and practice. Initially the beginner will make many mistakes in the course of learning. Focusing on specific details is generally not appropriate at this stage. Rather, it is better for the learner to practice bobbing up and down until they can develop their own rhythm, before more specific information and refinement can be given. This can happen in the next phase when the learner is more comfortable and confident that they can bob down and up consecutively without swallowing water.

2. INTERMEDIATE OR ASSOCIATIVE STAGE

In this stage, the beginner begins to get the feel of the movement and the skill becomes more fluent. **IF** the skill or movement can't be performed on call, the swimmer is probably still in the beginner stage. Once they can perform the movement with relative consistency, sequences can be linked together and rhythm and timing are developed. With practice the swimmer can share his attention between the movement itself and other activity surrounding him. For instance, he can learn to turn his head sideways for breathing and in conjunction with his arm movement, rather than focusing on the

act of inhaling and exhaling which is beginning to occur more naturally. The Teacher/Coach can also give specific feedback and make adjustments relatively easily. The swimmer is gradually linking the action and how it should **look** with the way it **feels** to him.

This is the easiest stage for the Teacher/Coach to make technical corrections. Before technique and faults have become ingrained and habits either good or bad established. Smaller groups and one-on-one teaching are best so swimmers have a greater chance of their specific needs being addressed. Swimmers should not be promoted prematurely into larger groups swimming longer distances, while they are still in this stage, as any errors left uncorrected will be carried over. Their needs are less likely to be catered for and corrections harder to make in a larger group.

However, it can also be the time when the Teacher/Coach can become conflicted with meeting the needs of the child, the parent and the swim school. Often the parent wants the child promoted prematurely, to stay with a friend or to give the child a psychological boost. In some circumstances this can be warranted. Sometimes, it is the swim school that wants to push kids through for financial reasons. There are no easy answers unless you are in control of your own program.

To reiterate a point, this is the critical stage of refinement and it is important that the coach or teacher aims for the perfect execution of the movement.

3. ADVANCED OR AUTONOMOUS STAGE

Once they are confident the swimmer can perform the movement **perfectly and without thinking about it**, so they can focus on other movement or performance aspects instead. It is imperative that the Teacher/Coach instils in the swimmer the ability to maintain the technique through a variety of differing stresses. For instance, the Teacher may have the swimmer performing a nice Freestyle technique with fins, but can they maintain that technique without fins or over a greater distance? The Coach will train the swimmer to maintain technique at slow, medium and fast speeds or while maintaining a certain stroke count or stroke rate. Failure to do so (stroke reverting back to the old habit) can be seen as the failure of the coach to provide the environment for **perfect practice** to occur.

However this stage can be a double-edged sword. The swimmer can now perform the movement automatically but any deviations from **perfect practice** are now ingrained as bad habits. I recently read that (conservatively) it takes 1,000 try's to really break a bad habit and 1,000 more try's to establish a new one. So, for every 20,000 strokes swum badly, it takes 20,000 performed correctly to **break** the habit and another 20,000 to bed it in. Think about it!! If the swimmer has graduated into squad and his coach needs to **correct** a stroke fault, the swimmer will again move back into the beginner and intermediate stage. However, while the swimmer is attempting to fix their technique, it usually results in a decline in speed, as the swimmer will only be able to perform the movement at slow speeds so they have time to think it through. Hence, their speed work will be compromised. Squad swimmers may stay at this intermediate stage for months to make any significant, long-lasting change to their technique and it takes a huge commitment, belief, trust in the coach and often sacrifice on their part to persevere. They have to be prepared to swim thousands of metres slowly and with control, before they can hope to hold their new technique over increasingly faster speeds. Not a great program if they aspire to compete at any high level meets. Any reversal to old habits at speed is an indicator that the swimmer has not yet integrated the new movement completely. The wise coach will advise the swimmer to perhaps sacrifice a whole season in the knowledge that the improved technique will bring about superior results in the following season. When they do resume competition, they will find some low meets with less pressure for their swimmer to practice swimming at speed, but with control. No wonder that many coaches view this prospect as daunting and many swimmers find it easier not to bother. Some coaches often justifying their inaction as letting the swimmer develop her **natural** style.

This can be very frightening for the swimmer and parent to contemplate and again, the coach is often faced with the parent who knows very little about the sport of swimming but just wants to see their child getting faster not slower. They may equate getting faster by training harder, longer and further. Often the coach ends up compromising the long-term benefits of a technique-based program for the short-term gain of a high volume, endurance program. In my opinion, volume and endurance can continue to be built over the course of a swimmer's career, but as coaches we only have a small window of opportunity to bed in technique before it becomes too difficult and arduous to change. The coach who runs a technique-based program needs to sell parents on his program and stand by his philosophy with the courage of his convictions. Yes, you may lose some parents/swimmers along the

way who feel differently, but those who remain will be there because they have faith in your program. Once you have the support of those behind you, your program will move from strength to strength and your results will begin to justify your actions to others.

You may think this is contrary to the position that Australian Swimming promotes ... i.e. that young swimmers should be in an endurance-based program. I agree with this line of thought, **but only when it goes hand in hand with a technique driven program**. Technique should **never** be sacrificed in the quest for speed or endurance and any speed work should be performed **with control**.

Coaching technique therefore should not be something sparingly taught, or relegated to special **technique** sessions that parents have to pay extra for. It should be an inherent part of every session with the steady application of drills and constant attention, reinforcement and feedback by the coach. The coach must work actively until the swimmer can execute drills perfectly. So many coaches prescribe drills without telling the swimmer the how, what's and the why's, or without ensuring they are performed with any great skill or precision. All that ends up happening is the swimmer swims garbage laps thinking about what they are going to have for dinner that night or their homework, instead of truly thinking and caring about what they are doing. A surprising number of these coaches will be under the misguided impression that because they are setting drill work, they are indeed doing **technique** work. I say they are only paying lip service to it. Unfortunately, many parents are not discriminatory enough to tell the difference and the coach believes it is the swimmer who is incapable of producing anything better. The discerning parent will often go elsewhere.

There is much more to coaching than sending swimmers off on a departure time or holding a stopwatch and telling their times. The coach who sets a program and then stands back and watches is doing everyone a disservice. In reality they are not **coaching** in the true sense of the word; rather they are merely **supervising** which takes no great training or skill and could even be undertaken by any parent.

There are some occasions when it can be justified to step back and just allow the kids to get the job done without interruption. But if technique is deteriorating because of fatigue, what is the benefit? Garbage laps produce bad habits. Surely, even more reason why we need to be fastidious about developing it correctly from the outset.

It may also benefit the swimmer to de-emphasise technique for short periods, particularly during a rapid or extreme growth phase around puberty. Some children lose all coordination as ligaments weaken, and will just get more frustrated as they struggle to control their elongating limbs.

I like to see coaches active and inter-relating to their swimmers every moment they are on pool deck. They should rarely if ever sit down during the course of a practice. Developing hand signals and gestures to indicate how to adjust a stroke while in motion will eliminate time wastage and keep the program moving. The coach must train the swimmers to look for him as he roves the deck. By positioning yourself at the end of the lane you can gesture to the swimmer as he swims toward you and breathes on Breaststroke or Butterfly. Standing on the block will enable the Backstroker to maintain eye contact for some time as he swims away from the turn. Freestylers can swim breathing to the sidewall where the coach may be walking. Not only can the coach maintain eye contact with an individual, but also an additional benefit to the swimmer is the ability to breathe equally well to both sides, hence better balance and equilateral muscle development.

The coach has plenty of opportunities to offer praise, feedback or adjustments during rest intervals. Some swimmers can do drills and technique at the back of the lane line if they need additional work, without interfering with the others and individuals will certainly benefit for the coach pulling them out of the water to miss a repeat every now and again to reinforce and refine actions on land. Land-based drills should not be discounted as they can be used to great effect.

A creative coach will find ways of giving individuals what they need without compromising the integrity of the overall program. For instance, if lane space is a problem, and you have a set of 10x100 Freestyle on a set interval at a moderate to fast pace, the swimmer who requires technique could go at the back doing 50's drill on the same time interval, or could do 100's as drill, but using fins so he can swim slowly and correctly, thus keeping with the lane.

What does this have to do with flow state swimming? EVERYTHING! I would like to reiterate my opening statement.

The Teacher is involved with BUILDING the stroke

The Coach is involved with REPAIRING and REFINING the stroke

When we do look at the swimmer and detect a fault, what we see is usually the **END** result of a chain reaction. Most **repairers** either try to fix the obvious end product, or only go back to fix one or two links in the chain without fixing the root cause. (For the want of the nail the kingdom was lost!) To give an analogy, the Leaning Tower of Pisa can be used as a metaphor for a swimmer with a stroke fault.

When one looks at the base of the Tower, you are hard pressed to see any deviation from the vertical. In fact it is only very slight and hardly perceptible to the eye. But the further up the structure one looks, the more obvious it becomes and at the top, one can clearly see the tower unbalanced and listing dangerously. Unless we take corrective measures, the structure will weaken and topple over – perhaps not today, tomorrow or even in the near future, but rest assured, it will happen eventually. We could patch it up – for example propping it up. This may serve as a temporary solution, but ultimately it is not getting at the fundamental problem at the foundations and will probably not produce a satisfactory long lasting result. The best result would be to dismantle the structure and rebuild it correctly from the ground up. This will of course be at great cost and time, but will ensure the building survives for future generations. Of course all this time and effort and cost could have been avoided had the building been built correctly on a more stable base. Rebuilding it will create a stronger structure better able to withstand the ravages of wear, tear and time.

When a swimmer comes to me with stroke faults, I usually end up having to do exactly that. Dismantle the stroke and rebuild it because, like the Leaning Tower of Pisa, virtually **ALL** stroke faults can trace their cause back to one fundamental problem. That is **balance.**

PART 2

The H^2O philosophy embraces the concept of swimming as a sport for life – not so much from a competitive aspect (although this is certainly available with the proliferation of Masters Events), but from the improved quality of life that it brings through fitness. Not all young swimmers want to compete, but if we can inspire a love for the sport from an early age hopefully many will still be swimming well into their old age. It is not uncommon for swimmers to have 50 years of regular swimming ahead of them. I am in my 39th year of swimming regularly since I learnt to swim, so I have the benefit of hindsight and personal experience. If the strokes are built correctly, the swimmer will have few problems over their lifetime with overuse injuries, or back or neck problems. Many young swimmers I see today will have all sorts of structural problems when they are older through the sheer repetition of bad training practices (such as kicking on overly large or buoyant kickboards) and poor technique.

To maintain a swimmer in the sport for the next ten years (or for life), it is important that we **hook** them by fostering a love of the water. For a swimmer to truly experience the pure joy, exhilaration, beauty and grace in the water (which can include, but is not limited to **fun**) they need to find total harmony in the aquatic environment. And in order to achieve this harmony and fluidity (or **flow state**), they must be balanced. Balance is the **END** result of a swimmer's buoyancy and body position and will only be achieved by learning two fundamental skills ... **complete** relaxation and **total** breath control. Further, relaxation and hence good flotation, body position and balance can only occur when the swimmer has mastered breath control first.

A balanced swimmer therefore is conditional upon the following five points, which in order are...

1. Breath Control
2. Flotation, which is the product of both body position and head position. Incidentally, posture alignment (as discussed in my introduction to Part 1) is playing an increasingly important role in body position. Also head position is significantly lower in the strokes today than compared to ten years ago. Swimmers have always notoriously had poor posture and this is one aspect that coaches need to address.
3. A relaxed but solid, steady, propulsive and continuous kick.
4. Good body rotation skills
5. And finally, if the first four points are well established the ability to control **all** aspects of arm movement.

If we are to develop **great** swimmers at the top end of our program, we need to teach our swimmers from the outset the pleasure and freedom that water brings. The swimmer who is well balanced will be in complete control of the aquatic environment and every facet of their movement within that environment. The better they become the more freedom to move and explore within that environment. Ironically, even many top international swimmers never achieve this.

Only when fluid, harmonious swimming is reached can a swimmer truly feel the Zen-like qualities of movement in the aquatic environment, similar to those experienced in Marshall Arts where there is total body/mind

control. Symptomatic of these swimmers is their heightened feel for the water, their ability to detect and adjust to subtle fluctuations in the water and the marrying of what they **think** they are doing with what they really **are** doing – something that even many elite level swimmers are not able to do.

Swimming is like no other sport. It is a sport conducted in a totally unnatural environment where none of our land-based instincts work; we are deprived of most of our senses including severely restricted vision; and with one false move or badly-timed action we can be on the receiving end of at least a highly unpleasant dousing of water up the nose or in the lungs – at worst a potentially life-threatening experience. Added to this, it is one of the rare sports performed lying down. You can begin to see why it is an extremely hard sport to teach and requires more practice time than virtually any other sport.

From the time we are born, our **natural** instincts aim toward mastery of vertical balance. If we think of an ice skater learning to skate, his principle aim is avoidance of injury by attempting to remain stable and vertical. Any slight movement that is unbalanced will result in a hard fall and perhaps injury. In short, the moment the skater is not perfectly balanced, they suffer the consequences. Swimming however is much more forgiving. A lack of balance won't result in injury, but it will result in the swimmer finding other ways of compensating. They do this by reverting back to strategies that thousands of years of Darwinian evolution have taught us; strategies that are largely unsuccessful in water and result in inappropriate movements that manifest themselves as stroke faults.

For example, the fearful swimmer with poor breathing technique is unable to set his head in the correct position in Backstroke without water going up his nose. Consequently he drops his hips, **sits** down in the water, and raises his head to avoid water washing over his face. We can teach the swimmer to relax and lie better in the water and also to move with minimum disturbance through the water. But unless we teach the swimmer a better breathing technique to control the water and prevent it from flowing up his nose, he will resort back to his old habits every time water washes over his face. If we get our swimmer to the point where he can blow bubbles from his nose when this happens, and to control the **rate** of airflow, he will never be troubled by it.

Similarly, many fine swimmers are successful despite holding their head too high or not horizontally aligned when breathing, or crossing their legs as they turn to breathe. How much better could they be had these subtle but significant balance flaws been corrected? Perhaps only marginally ... but, as every coach knows, every microsecond counts.

Swimming is no different to any other sport. In order to maximise his power and make the best drive in a golf swing, the professional golfer must be perfectly balanced. Hitting the ball in an unbalanced position will result in a far from satisfactory drive. Power will be reduced or the ball will be deflected away from the desired direction. So too in swimming. Any imbalance will result in awkward movements with reduced power. Yet in swimming, balance skills are rarely afforded the amount of attention they deserve with teachers all too quickly moving on to arm and leg propulsion resulting in a swimmer with limited ability and hard to fix stroke faults.

In short, if we are to truly master our aquatic environment as the sea creatures have, we must override our natural instincts and replace them with what Terry Laughlin calls **fish-like** strategies.

World-renowned swimming coach and author Bill Boomer, whose work Terry Laughlin has based his practical applications on, explains the human three (triunal) brain system. According to Boomer we have...

1. A Reptilian Brain whose principle function promotes instinctive, reflexive survival behaviours such as self-preservation and reproduction.
2. A Limbic Brain which is the seat of our emotions and is the centre of our flight/fight reactions, and...
3. A Cerebral Cortex or thinking brain consisting of left and right hemispheres, which directs among other things, logic and both verbal and non-verbal thoughts and feelings.

Boomer states that safety and survival are foremost instincts directed by our primitive brain. A loss of environmental balance creates unstable conditions that signal **DANGER**!

Our limbic brain shuts down or over rides our cerebral cortex and initiates the following reactions...

1. Flight
2. Freeze or faint
3. Fight

For the swimmer, these reactions influence the beginner and their ability to learn.

1. Flight ... Swimmer tries avoidance behaviour
2. Freeze or faint ... Swimmer tenses up and becomes rigid
3. Fight ... Swimmer tries to **muscle** or fight his way through the water. These I call the

B&T's or the Bashers and Thrashers.

Either one of these natural reactions is certainly not conducive to harmonious swimming. It is the natural instinct of humans that, from the moment they are born, they spend the rest of their lives developing and mastering a land based, gravity defying sense of balance. **NONE** of these instincts however, can be applied in water. For this reason, I don't believe that swimmers should be allowed to develop their stroke **naturally**. Certainly play and experiential learning are valuable tools for the teacher, but the swimmer will usually learn alternative ways of balancing in the water (that are not necessarily the best), unless guided by a teacher.

What the swimming teacher must do then, is teach the swimmer how to override their natural instincts and re-learn an entirely different set of balancing skills. A swimmer in an unstable medium that is constantly moving and shifting is more akin to a parachutist in free fall, but without the benefit of most of their senses.

It is very important therefore that we get it right early, and that we continue to work at the fundamentals throughout a swimmer's career.

Boomer's groundbreaking work with top athletes including those on the US Olympic Team has shown that even at such high levels, some swimmers exhibit fear reactions in the water. One easily detectable way is to notice whether a swimmer lifts the chin off the water when kicking on a kickboard, or is comfortable with the water line at the mouth's edge. Relaxed swimmers can comfortably inhale, even with water running into their mouth as they do so. Water is **trapped and spat** on the following exhalation. A Butterflyer who raises his head high to get his mouth clear of the bow wave is another example of a fear reaction; so too is the Freestyler who turns too far or sets their head at the wrong angle when inhaling.

Breathing and head position are inextricably linked and critical to harmonious swimming. In Butterfly, the mouth should be kept down low on the water with minimum up and down movement. This will result in a much flatter stroke than is often taught. In Freestyle, the head should remain aligned with the water level roughly dividing the face in half during the breath. Failure to do so results in a corresponding drop in the body usually at the opposite end, (the legs) much like a seesaw effect. Even a minute drop will, in turn, result in additional drag and energy needlessly being expended to compensate.

Perfect balance then, will result in effortless swimming much like frictionless movement in a state of perpetual motion – the swimmer can just keep going and going ... slipping through the water which supports and **opens** as the swimmer moves through it. To the observer, they will see a slow, relaxed almost lazy looking stroke which is quiet and with a minimum of splash or disturbance of the water. Alex Popov is one of the best proponents of this technique looking almost leisurely at race speed.

The good news is that these are teachable and trainable skills and at H^2O we have developed our own sound method to achieve this state. Mastery of these fundamentals at all levels within **your** program will pay large dividends for the swimmer and hopefully a love for the sport that will endure a lifetime.

DISTANCE SWIMMING IN AUSTRALIA Included NOT Encouraged?

By Cindy Adair, CSD Swimming Club

Recently, our men have spearheaded Australia's dominance in distance Freestyle, however are we guilty of sitting on our laurels when it comes to developing a long term plan to stay at the top?

The problem with distance swimming quite simply is it takes time. As a result our club, regional and even state bodies are reluctant to include distance events in mainstream swimming meets. Instead distance meets become a **special event** rather than a regular feature. This gives rise to the following problems...

1. Lack of club level swimming over distance fails to encourage those with a natural affinity to the endurance events and delays the age at which our young swimmers step up and give distance a go.
2. The next step in competitive swimming is that of development meets. Development meets rarely if ever feature distance events. If they do they have a qualifying time in order to ensure that officials, parents and swimmers are not forced to sit through lengthy sessions. The majority of Development Meet attendees are not capable of achieving these times and those swimmers who can achieve these times are ineligible to compete in any other event as their times exceed the break times. In short it is not a swimmer or swimming family friendly scenario. Perhaps an additional short distance only session with no qualifying times could be scheduled before or after the main program takes place.
3. Open level regional meets are often the first place we see a commitment to inclusion of distance events. However again, these events are restricted by qualifying times and

meet regulations often state that they will not accept club night times as legitimate entries. Our swimmers are now well and truly stuck between a rock and a hard place. Club nights are the only place they have been able to enter a distance event with NT and now their club night time is not considered a legitimate entry time.

4. Even at National Age levels distance swimming is included but not encouraged. Unlike in the other events in the programs age groups are lumped together (15 & Under and 16 & Over) meaning often talented swimmers are trapped between qualifying times unable to qualify during what is a prime period of drop-out.

What can we do to encourage distance swimming across the board?

At a club level, distance swimming needs to remain on the agenda and coaches must fight hard to ensure that the needs of swimmers are put first and not those of officials or parents. Fun initiatives such swimarathons, awards of achieving a particular continuous distance and occasional distance work in training ensure those swimmers who wish to pursue this type of event are exposed early in their development.

At a regional, state and even national level a successful model used throughout the world is that of an Online Distance Swimming Series. These **Meets** encourage all clubs to hold regular Distance Nights. Provided a club can get hold of three timekeepers per lane and a qualified referee, the time is considered legal. Times are then submitted via e-mail to a central distance administrator and compiled. Results are then published to all participating clubs.

This **Virtual Racing** gives distance specialists regular reference points for their training efforts, an opportunity to test themselves against their peers without having to travel and significantly reduces the load on officials. Such an initiative also has benefits for those in swimming development. Through monitoring results and participation, talent ID, camp funding and coach education can be made available to those who have made a commitment to distance swimming.

As a nation we have come to pride ourselves on finishing international meets with a bang when our 1500m specialists storm home to take gold. However we cannot afford to have only a handful of coaches and clubs fostering young talent.

Reproduced from March 2003, No.3

BETWEEN THE SPORT & THE FAMILY

Thomas Rupprath (GER) – Men's winner of the FINA Swimming World Cup 2002/2003

By Gerd Heydn, Press Officer of the German Swimming Federation

Thomas Rupprath is, along with Franziska van Almsick and Sandra Volker, a real professional of the German swimming regime. After his overall victory in the FINA Swimming World Cup 2002-2003, this 25-year-old athlete achieved a new landmark in his career. A trajectory of seven years in the circles of world elite swimming includes 27 medals at the Olympic, World and European level. The German star has already established seven World Records (WR) in Backstroke, Butterfly and Individual Medley events. In the Berlin meeting of the FINA Swimming World Cup Rupprath recorded one of his most surprising performances – a new WR in the 100m Individual Medley with 52.58.

These recent achievements make the German swimmer both proud and confident. Another major challenge is still waiting for him – the achievement of another WR in the Long Course event. One event remains his top priority – the 100m Butterfly, in which he is only 0.07 of a second behind the WR holder, the Australian Michael Klim. Two major competitions, the next FINA World Championships next July in Barcelona and the 2004 Olympic Games in Athens are the focus of all his efforts.

AWAY FROM THE FAMILY

The **adventure** of swimming started for him at the age of 11, when the training became more regular in his hometown of Neuss. Today, he is coached by Henning Lambertz in Wuppertal, 40km away from his native city. Rupprath navigates the fast lanes of the German highways as effectively as he does the lanes of his training pool – and conquering these distances seem to be second nature to him.

His coach is convinced that Rupprath has one special talent that will make the difference when competing in a 50m pool – his sub aquatic resistance. *"In terms of the start and the initial dive, Thomas is certainly one of the best*

and the fastest. We work a lot on this crucial moment of the race as even for the 50m pool this 'detail' is vital and can decide the winner", considers Lambertz. In practical terms, sprints of 20x50m are part of his training program. With one single detail – the first 25m are done under the water surface. Rupprath is swimming between 45 and 60km a week with an extra one hour a day of dry work (strength and endurance exercises, jogging) during the period prior to the competition.

"I do the majority of my preparation in Wuppertal and I live with my parents in Neuss", explains the German swimmer. Rupprath was married last September to Urte Lindner, sister of an Olympic bronze medallist in diving (Dörte Lindner). His wife already has a 10-year-old daughter, Elizabeth, and the family lives in Rostock, more than 350km away from Wuppertal. During the competition periods, he spends very little time at home.

Date of Birth: March 16, 1977
Place of Birth; Neuss
Weight: 74kg
Height: 1.82m
Club: SG Neuss
Coach: Henning Lambertz
TOP PERFORMANCES
1996: SC European Championships
1st 100m Butterfly (5322)
2nd 200m Butterfly (1:57.30)
1997: LC European Championships
5th 100m Butterfly (53.99)
2nd 4x100m Medley Relay
SC World Championships
7th 200m Butterfly (1:57.66)
15th 100m Butterfly (53.72)
1998: LC World Championships
16th 100m Butterfly (54.95)
25th 200m Butterfly
SC European Championships
1st 50m Backstroke (24.13)
3rd 200m Butterfly (1:54.99)
5th 50m Butterfly (23.97)
1st 4x50m Medley Relay
1999: LC European Championships
2nd 50m Backstroke (25.94)
8th 50m Butterfly (24.98)
11th 100m Butterfly
SC European Championships
2nd 200m Butterfly (1:54.43)
4th 50m Butterfly (23.84)
6th 50m Backstroke (25.15)
2nd 4x50m Medley Relay
2000: Olympic Games
7th 100m Butterfly (53.13)
15th 200m Butterfly (1:58.96)
3rd 4x100m Medley Relay (3:35.88)
LC European Championships
2nd 100m Butterfly (53.38)
6th 50m Butterfly (24.36)
SC World Championships
5th 50m Butterfly (23.96)
5th 100m Butterfly (52.05)
5th 200m Butterfly (1:55.31)
2nd 4x100m Medley Relay
SC European Championships
1st 100m Butterfly (51.31)
1st 200m Butterfly (1:53.28)
4th 50m Backstroke (24.83)
4th 50m Butterfly (23.71)
1st 4x50m Medley Relay (1:36.23(
2001: LC World Championships
2nd 50m Backstroke (25.44)
8th 50m Butterfly (24.16)
10th 200m Butterfly (1:58.15)
13th 100m Butterfly (53.27)
2nd 4x100m Medley Relay (3:36.34)
SC European Championships
1st 100m Backstroke (50.99)
1st 100m Butterfly (50.26) WR
1st 4x50m Medley Relay (1:34.78)
5th 4x50m Freestyle Relay (1:27.26)
2002: LC European Championships
1st 50m Backstroke (25.05)
1st 100m Butterfly (51.94)
2nd 50m Butterfly (23.78)
3rd 4x100m Medley Relay (3:37.05)

THE IMPORTANCE OF EXERCISE
Aquatic Sports & Pregnancy

By Dr Margo Mountjoy
FINA Sports Medicine Committee Chairman

Over 50% of aquatic athletes are female. Pregnancy is an issue that faces most women at some time in their lives. Many of our competitive athletes are in their reproductive years and pregnancy is an issue that may be a concern for them. There are also many active Masters athletes who are training and competing during their reproductive years. For the retired athlete, swimming is a sport that they may wish to continue on a recreational level for health and fitness.

In this article, I will review the most recent scientific evidence regarding exercise in pregnancy. I will also address the risks and benefits of the aquatic sports in pregnancy. These guidelines will provide female athletes with advice based on fact – and not on folklore.

HOW DOES THE BODY CHANGE IN PREGNANCY?

Musculoskeletal Adaptations

- The increase in weight causes increased forces or stress through the hips and knees
- The enlarged abdomen may cause strain on the lumbar area (lower back)
- Balance may be affected by postural changes from the enlarged abdomen
- Ligaments are looser or lax due to the effect of the natural hormone called relaxin

Cardiovascular Adaptations

- There is an increase in blood volume, heart rate and heart function (cardiac output)
- There is a drop in blood pressure in the second trimester (months 4-6)
- There is a blunted response of the heart rate in pregnancy to exercise
- When the pregnant woman is lying on her back, the weight of the pregnant uterus may compress and occlude the large vein returning blood to the heart (Inferior vena cava) causing fainting after the fourth month

Respiratory Adaptations

- There is an increase in breathing rate in pregnancy
- There is an increase in oxygen uptake and oxygen consumption
- Deep breathing is inhibited at the end of pregnancy as the diaphragm is pushed up by the large uterus

Metabolism Adaptations

- The basal metabolic rate (heat production) is increased
- Fatigue is a normal phenomenon in pregnancy especially during the first and last three months

WHAT ARE THE EXERCISE RECOMMENDATIONS?

Frequency: According to the Canadian Academy of Sports Medicine, 30 minutes of moderate intensity exercise is recommended for 3-5 times minimum per week. A gradual increase in duration and frequency is recommended only after the first trimester (months 1-3). If an athlete is already training more than this, she can continue her current regimen in the absence of any complications and providing that she not increase her training during the first three months.

Aerobic Exercise: Aerobic exercise is recommended to maintain fitness during pregnancy. It is important to avoid exercise that increases risks of falling due to the changes in balance that occur in pregnancy. There should be a good warm up and cool down.

Resistance Training: Weight lifting is also safe in pregnancy providing that the pregnant athlete does not exercise in the supine or lying down position after the fourth month. As described above, this can cause fainting due to occlusion of the large abdominal vein by the pregnant uterus. The resistance or weight should be lowered and the repetitions should be increased. Breath holding should be avoided.

Flexibility: Due to the effects of the hormone relaxin on the ligaments, gentle stretching is recommended to avoid injury.

Nutritional Recommendations: After the 13th week of pregnancy, the pregnant athlete should increase her caloric intake by approximately 300kcal per day. A further increase may be necessary depending on the amount of energy expended in exercise. Adequate water intake before, during and after exercise is essential in the pregnant athlete.

Of course, the general nutritional recommendations in pregnancy also apply to the pregnant athlete s well. These include an increase of calcium and an adequate intake of folic acid (leafy green vegetables).

ARE THERE SPORTS THAT PREGNANT ATHLETES SHOULD AVOID?

According to the Australian Institute of Sport, there are a number of sports that should be avoided in pregnancy. These include...

- Scuba Diving
- Parachuting
- Water Skiing
- Martial Arts
- Gymnastics
- Trampoline
- Horseback Riding

It is essential to remember to avoid exercising in the supine or recumbent position. Contact sports should be avoided due to the risk of direct trauma to the abdomen. As well, any sport where falling is a risk should be avoided. Scuba Diving is very dangerous in pregnancy as the foetus is particularly vulnerable to decompression sickness.

IS IT SAFE FOR ALL PREGNANT ATHLETES TO EXERCISE?

The American College of Obstetrics & Gynaecology has developed two lists of complications that preclude a pregnant woman from exercising. The first list contains **absolute contraindications** to aerobic exercise curing pregnancy. If a pregnant athlete has any of these complications she must not exercise under any circumstances. It is important that all pregnant athletes consult a physician to rule out the presence of any of these complications prior to exercising.

ABSOLUTE CONTRAINDICATIONS FOR EXERCISE IN PREGNANCY

- Cardiovascular Disease
- Restrictive Lung Disease
- Multiple Gestations
- Vaginal Bleeding
- Incompetent Cervix (repetitive miscarriages)
- Premature Labour
- Rupture of Amniotic Membranes
- Pregnancy Induced Hypertension (bp)
- Placenta Previa (abnormal placement of placenta)

The second list contains the **relative contraindications** to aerobic exercise in pregnancy. Exercise may occur in these

situations, but only under close medical supervision. Again, a medical doctor must be consulted to evaluate and monitor all pregnancies to detect and treat any of these complications.

RELATIVE CONTRAINDICATIONS FOR EXERCISE IN PREGNANCY

- Severe Anaemia (low haemoglobin)
- Poorly-controlled Diabetes
- Extreme Obesity
- Extreme Underweight
- IUGR (Intra-Uterine Growth Retardation)
- Chronic Bronchitis
- Poorly-controlled Hypertension
- Poorly-controlled Seizure Disorder
- Heavy Smoker
- Poorly-controlled Thyroid Disease
- Orthopaedic limitations

WHEN SHOULD THE PREGNANT ATHLETE STOP EXERCISING?

It is important that all pregnant athletes be aware of the warning signs of complications that could be affected by exercise. Educating the pregnant woman to watch for these complications is essential! If any of these situations were to occur, the athlete should stop exercising and seek medical attention for evaluation.

The following is a list of the warning signs...

- Vaginal bleeding
- Shortness of breath
- Headache
- Dizziness
- Calf swelling and pain
- Chest pain
- Premature Labour
- Amniotic fluid leakage
- Decreased foetal movements
- Insufficient weight gain

One of the most important situations when the athlete should stop exercising is in conditions of extreme heat. Increases of more than 1.5 degrees of maternal core temperature during the first three months of pregnancy can cause serious malformations to the brain and spinal cord of the foetus. For this reason, hot tubs, saunas and exercising in hot environments are to be avoided. Resting frequently and adequate water intake during exercise are essential in preventing this tragic, avoidable phenomenon.

WHAT ARE THE BENEFITS OF EXERCISING IN PREGNANCY?

The benefits of exercise are well known to any athlete! There are added benefits in pregnancy. The Canadian Academy of Sports Medicine outlines the following benefits of exercise in pregnancy.

BENEFITS OF EXERCISE IN PREGNANCY

- Reduction in the risk of Diabetes and Cardiovascular Disease
- Reduction in the incidence of obesity
- Reduction of Osteoporosis
- Reduction of some cancers
- Better general health
- Improvement of self-esteem
- Improvement in strength, balance, endurance and fitness
- Health Care cost savings
- Improved sense of well-being
- Reduction in the symptoms of pregnancy
- Decrease in complications during Labour
- Reduced recuperation time from Labour

WHAT ABOUT THE SAFETY OF AQUATIC SPORTS IN PREGNANCY?

Scientific research has been conducted on swimming in pregnancy. Exercising in water has many advantages over exercising on land. The aquatic environment is perfect for maintaining a normal temperature, thereby decreasing the risk of hyperthermia and subsequent foetal developmental problems as described above. Exercising in water also minimises the risk of joint injuries as the water assists in dissipating the increased gravitational forces through the joints. As there is a shift in blood volume in the water, there is a significant reduction in oedema or swelling in the lower legs, which some women find troublesome during pregnancy. Most importantly, the research shows that there are no adverse effects of swimming on the foetus.

There has been no specific scientific research on exercise during pregnancy in the other aquatic disciplines. Taking into consideration the physiological changes in the pregnant athlete's body and the general guidelines regarding exercise in pregnancy, certain recommendations can be made. Caution should be used when playing water polo as it carries a high risk of trauma to the abdomen. Diving is also not an ideal sport while pregnant due to the altered balance and risk of trauma. Synchronised swimming has many features that make it a risky form of exercise in pregnancy. For example, complex lifts and boosts should be avoided as this increases the risk of trauma to the abdomen. As a pregnant woman's balance is altered in pregnancy, the ability to maintain a vertical is difficult. Most importantly, prolonged breath holding is not recommended in pregnancy!

WHAT ABOUT THE PREGNANT ATHLETE WHO WISHES TO REMAIN COMPETITIVE?

The pregnant competitive swimmer will encounter the same limitations and physiological changes that the recreational athlete faces. These women require closer medical monitoring. According to the American College of Sports Medicine, most pregnant competitive athletes do maintain a higher level

of exercise throughout pregnancy and resume a high intensity level of training faster after delivery.

There are a number of factors that limit the ability of the competitive athlete. Weight gain, laxity of joints and ligaments, and change in balance inhibit the pregnant athlete's performance. Due to the anaemia in pregnancy from the increased blood volume, long-distance swimming is challenged. It is found that the infants of elite athletes tend to have lower birth weights.

Particular attention to heat complications is necessary in high intensity training. Adequate hydration is essential.

SUMMARY

The scientific evidence shows that exercise in pregnancy carries a low risk to both the woman and the foetus. It is also clear that exercise in pregnancy has many important and significant benefits. In particular, swimming is one of the safest and most comfortable forms of exercise that a pregnant athlete can practice. For this reason, I encourage my non-aquatic athletes to cross-train during their pregnancy by swimming.

The guidelines for exercising in pregnancy described above can be utilised by athletes, coaches, trainers and physicians. I encourage and challenge all women to maintain their fitness and well-being during pregnancy by exercising in the water!

DOPING NEWS

The four-year ban imposed on Claudia Poll confirmed by the CAS – The Court of Arbitration for Sport (CAS) has dismissed the appeal filed by the Costa Rican swimmer, Claudia Poll, against the decision of the FINA Doping Panel to sanction her further to a positive out-of-competition doping control with nandrolone metabolites. Accordingly, the decision made by the FINA Doping Panel on 3rd June 2002, applying a four-year suspension commending on 26th March 2002, is confirmed. The CAS Press Release appears on www.fina.org.

FINA Doping Panel decision – The FINA Doping Panel has decided after a hearing on this matter that **Ms Anna Stylianou (CYP)** was suspended for **four (4) years** on consequence of a positive doping test on 19-norandrosterone (metabolite of nandrolone) carried out on 16th June 2002. Ms Stylianou's suspension started on **2nd July 2002** and a retroactive sanction involving the cancellation of all results achieved by the swimmer during the six-month period before the collection of the positive sample is imposed.

NEW IDEAS FOR THE FUTURE
Free opinions of FINA Lecturers

The FINA Bureau, during its last meeting in Punta del Este (URU), decided to promote a study about the evolution of the FINA Development Program. So lecturers and specialists were invited to submit comments and ideas ... here are some of them ...

Wayne Goldsmith (AUS)
"I believe FINA should consider the implementation of a worldwide, standardised coach education program, which should include best practice principles and be the leading education system in the sporting world. This would comprise the development of resources, video and course structures so that courses and syllabus would be standardised and quality assured throughout the international FINA Family."

John Keppie (AUS)
"If possible, increase the number and frequency of clinics in developing nations."

Dr Ralph Richards (AUS)
"I would like to see some type of ongoing support given to National Federations in the Asia-Pacific regions. The specific courses run under the direction of FINA and the IOC/Solidarity Olympic Program are excellent. However, to achieve long-term benefits the coaches who are selected to attend the FINA-IOC programs must work through their national federations to pass on the information and act as ***mentors*** *or* ***role models*** *to their coaching peers. Various educational materials must be translated into the local language to reach a wider distribution and the coaches who attended the Clinic (where material is presented in English) must relay this information in their home language."*

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WORLD CONFERENCE ON DOPING IN SPORT APPROVED THE WADA CODE

TOWARDS A UNIVERSAL APPROACH

By Dr Andrew Pipe
FINA Doping Control Review Board Chairman

A few weeks ago representatives of the Olympic movement, other members of the international sport community, and governments met in Copenhagen, Denmark to review and ultimately approve the World Anti-Doping *Code*. This landmark agreement, many months in the making and arguably the subject of the most widespread consultation in the history of international sport, heralds a new approach to the problem of doping. The *Code* is the centrepiece of the programs of the World Anti-Doping Agency (WADA) a product of the

combined efforts of the Olympic Movement and national governments, which was born in the aftermath of the World Conference on Doping, held in Lausanne in February 1999, At that time there was rising criticism of the way in which anti-doping programmes were conducted and the lack of uniformity or consistency between and among them, and a growing concern about the degree to which adequate resources were being arrayed to combat doping.

THE WORLD CONFERENCE & THE WADA CODE

It was recognised that in order to achieve appropriate levels of harmonisation and standardisation that a new unifying document would be needed both to guide and to codify anti-doping practices throughout the international sport community. Thus the concept of the WADA *Code* emerged. Over the course of more than 18 months its contents were painstakingly constructed and offered for comment to all elements of the sport community. Multiple revisions followed and a final document was prepared for endorsation at the Copenhagen Conference. In the opening sessions of the conference the President of the International Olympic Committee, Dr. Jacques Rogge, spoke strongly in support of its adoption noting that acceptance of the *Code* by international federations, national Olympic committees and governments would be a condition of participation in the Olympic Games. Two and one-half days of careful, focussed discussion followed during which it was evident that while there were some areas of disagreement about the nature and scope of the *Code* and concerns about the degree to which it might be applicable in professional sport, it was nevertheless seen as a powerful new instrument that would dramatically the anti-doping environment. The *Code* provides for a new range of harmonised and effective anti-doping programs at every level of sport. In the months ahead signatories to the *Code* (the International Olympic Committee, the International Paralympic Committee, International Federations, National Olympic Committees, National Anti-Doping Organisations) will be required to ensure that all their anti-doping activities comply with the provisions of the *Code*. The *Code* is seen as "the fundamental and universal document upon which the World Anti-Doping Program in sport is based". It is designed to be specific in areas where uniformity is required, yet flexible enough to permit the implementation of approaches consistent with certain anti-doping principles. Some elements of the *Code*, notably the Prohibited List and the *International Standards* will come into effect on January 1st 2004. Signatories are expected to accept and implement the *Code* on or before the first day of the Athens Olympic Games. National governments will signal their commitment to the *Code* and its principles by signing a Declaration on or before the first day of the 2004 Athens Olympic Games. This will be followed by ensuring government participation in a convention or other obligation appropriate for each government on or before the first day of the 2006 Turin Winter Olympic Games.

The Code, International Standards & Models of Best Practice

The *Code* does not stand alone. It is supported by a number of *International Standards* that specify how certain technical and operational aspects of the World Anti-Doping Program must be delivered. Adherence to the standards is mandatory for compliance with the *Code*. In addition, *Models of Best Practice* will serve as recommended, state-of-the-art approaches to a variety of anti-doping tasks and responsibilities. In this way a degree of flexibility can be maintained which will permit changes in practice or procedure (by modifying the *International Standards* or revising the *Models of Best Practice)* without requiring changes to the *Code* itself. The World Anti-Doping Program and the *Code* are intended to protect athletes' rights to doping-free sport. It is essential, indeed mandatory, that all signatories and governments commit to high quality anti-doping practices in keeping with the principles, provisions and standards of the *Code*.

What will the adoption and implementation of the *Code* mean to the FINA family? In the first instance our athletes can be assured that, as a signatory to the *Code* FINA will ensure the continuation of its clearly expressed commitment to high-quality doping control programs. In many respects the programs and policies of already meet the requirements and provisions of the WADA *Code*. Every sport federation will have to ensure that its regulations, policies and practices are in accordance with the *Code* and undoubtedly this will mean changes in rules, documents and procedures and FINA will be no exception. There will be changes, for example, in the nature and type of sanctions applied for doping offences – an initial offence will now result in a two year sanction in contrast to the four year sentence which has been applied by FINA in the past.

DOPING OFFENCES

The *Code* is very specific in defining what constitutes a doping offence. The presence "of a prohibited substance or its metabolites or markers in a specimen constitutes a doping

violation as does the "use or attempted use of a prohibited substance or prohibited method". (The concept of "strict liability" is maintained – an athlete is considered to have committed an anti-doping violation whenever a substance is found in a sample irrespective of how the substance came to be present in the sample.) Failing to provide a sample, violating the requirement to provide information about athlete location or whereabouts, tampering with samples, possessing prohibited substances or methods, trafficking in prohibited substances, administering or encouraging the use of prohibited substances or encouraging any anti-doping rule violation are all considered to be doping violations. WADA-accredited laboratories are presumed to have conducted analyses in accordance with the prevailing *International Standards* and such laboratory finding will stand even when it can be demonstrated that a departure from the *International Standard* has occurred if such a departure did not cause an adverse laboratory finding.

THE PROHIBITED LIST

The list of substances and methods prohibited in sport is central to the development and application of any anti-doping program. The *Code* clearly delineates the criteria that will guide the consideration of a substance for inclusion on the prohibited list and establishes a clear process for its publication and revision.

A substance or method "will be considered for inclusion on the Prohibited List if .... the substance or method meets any two of the following criteria." These criteria may be described as (1) performance enhancement, (2) risk to the health of the athlete and (3) a violation of the 'spirit of sport'. Thus it is possible for a substance or method to be considered for inclusion on the list without being capable of enhancing athletic performance. Concerns have been expressed that the prohibition of certain substances might pose significant and expensive administrative burdens' on signatories or governments in processing and prosecuting cases involving commonly used medications or products whose ability to enhance performance is in doubt. It remains to be seen whether this will be the case. What seems to be clear is that the preparation of the List will be a more transparent and consultative process than has been the case in the past. An accompanying *International Standard* for the Prohibited List defines the process of review, consultation and consideration that will precede the creation or any revision of the list and establishes an annual timeline for this process. The opportunity for consultation will mean that the concerns of athletes, sport federations, sport medicine professionals and sport scientists may be expressed formally to those entrusted with the responsibility for the creation of the list.

An important new category of substances appears in the *Code* in the section that addresses sanctions (see below). The Prohibited List may also identify "*Specified Substances* which are particularly susceptible to unintentional anti-doping rules violations" by virtue of their "general availability in medicinal products or which are less likely to be successfully abused as doping agents". Such substances may be dealt with very differently insofar as sanctions are concerned and it will be interesting to see what substances, if any, are so identified.

The *Code* permits WADA, in consultation with signatories and governments, to monitor the use of substances that are not on the prohibited list but may be of interest for reasons of doping control or athlete safety. The substances to be monitored would be published and the results of such a program would be made available, in aggregate, to international federations and national anti-doping organisations. This will permit WADA, international federations and anti-doping agencies to develop an appreciation of any changing or emerging doping practices and respond appropriately.

THERAPEUTIC USE EXEMPTIONS (TUE'S)

The *Code* mandates that sport organisations must develop and maintain a mechanism that will permit athletes with legitimate, documented medical conditions to receive treatment with otherwise prohibited substances or methods. Such a process already exists under the auspices of the FINA Doping Control Review Board and only minor changes will be necessary to ensure consistency of documentation, etc. An *International Standard* specifies the membership of a TUE committee and the criteria for granting such exemptions. The *Code* also provides for a process of appeal and permits WADA to review the decisions of any TUE Committee. Some initial confusion may develop in the application of the provisions of the *Code* that guide the granting of exemptions for top-level athletes as opposed to those who do not compete at this level. It will also be important to clarify the distinction between substances for which a TUE is required and those that might require, as in the past, 'notification to a responsible authority'. The *Code* and the TUE Standard are both silent in this respect and it is hoped that as the Standard is completed that it will address this important point. An International Federation like FINA and its national

counterparts could be swamped, for instance, with applications for TUE's for asthma medications or certain glucocorticosteroids if such clarification is not forthcoming. The consequences could be time-consuming, expensive and deeply frustrating for athletes and medical officials alike.

TESTING

The *Code* requires all organisations conducting testing programs to carry out tests both in- and out-of-competition, to make no-advance-notice testing a priority, and to conduct target testing when indicated.

An *International Standard* will specify in detail all the elements of the testing process. Once again it may be necessary for FINA to modify its rules and procedures slightly but our programs are already consistent with the standards envisioned and anticipated.

All samples must be analysed only in WADA accredited laboratories and the *Code* notes that samples may not be used for any purposes other than the detection of prohibited substances without the athlete's written consent. This means that athletes can be assured that their samples are not being used for any research purposes without their knowledge and permission. The actual laboratory analysis will be conducted and reported in accordance with an *International Standard* thus there will soon be consistency and uniformity in the way in which laboratory reports are prepared. This will be welcomed by those whose responsibilities include the review of laboratory findings.

THE MANAGEMENT OF RESULTS & HEARINGS

Any organisation conducting testing must now ensure, following an adverse analytical finding of an A sample, that a review will be undertaken to ensure that no TUE has been granted and that no departure form the *International Standard* that for testing has resulted in a spurious laboratory finding. Athletes will be promptly notified of the results of tests and the implications of such results. The *Code* also permits the imposition of a provisional suspension after a review of any adverse analytical finding of an A sample. Certain conditions apply but this would seem to be a particularly significant provision for FINA as it would permit almost immediate disqualification from further competition following the receipt of an adverse finding in an A sample. In the setting of most swim meets this will ensure that the rights of all other competitors to doping-free sport can be protected while requiring FINA to provide a rapid provisional hearing or an expedited full hearing of any such case.

The *Code* outlines the elements and principles of a fair and timely hearing so as to ensure consistency insofar as the principles are concerned, recognising that the specific practices of individual sport organisations may differ slightly. In particular provision is made for sport organisations to develop and apply expedited processes at the time of certain or specific events … e.g. major championships, etc. Once again the *Code* clearly anticipates the needs and requirements of both competitors and sport organisations.

An individual who is found guilty of an anti-doping violation in the course of a *Competition* … e.g. 100m Freestyle … is automatically disqualified from that specific competition and forfeits all medals, points and prizes. Ruling bodies may specify that a violation occurring in the course of an *Event* … e.g. World Championships … may lead to disqualification of all results obtained at that event. This has clear relevance for FINA and its officials.

SANCTIONS

The harmonisation of sanctions has been one of the most discussed anti-doping issues. Many sport organisations, FINA and the IAAF for example, have been steadfast in calling for a minimum sanction of four years following a first offence. Other organisations have argued for lesser or more flexible sanctions. Irrespective of the validity of each of these positions it is the case that prior to the adoption of the *Code* athletes from the same country could test positive for the same substance under similar circumstances and receive significantly different sanctions from different sport authorities. The need for harmonisation has been noted and a consensus has emerged that an initial offence warrants a two-year sanction.

It has already been noted that the *Code* provides for lesser sanctions in the case of athletes found guilty of a violation involving a *"Specified Substance"*. It is assumed, for example, that this provision will allow for careful and enlightened consideration of cases involving athletes who have inadvertently used cough or cold medications.

Offences involving the trafficking or administration of a prohibited substance are dealt with more severely and will result in an initial four-year sanction. Anti-doping violations involving a minor are deemed to be particularly serious and athlete support personnel found guilty of such offences will receive lifetime sanctions (except in the case of *"Specified Substances")*.

Sanctions can be modified under the provisions of the *Code* (this will perhaps be of particular relevance in cases involving younger

athletes) when an athlete can demonstrate no fault or negligence in the circumstances that led to an anti-doping rule violation. Such an approach is in keeping with the realisation that cases may involve specific or unique facts and circumstances that merit special consideration. These rules apply only to the application of a sanction not to the determination of an anti-doping rule violation.

The *Code* also mandates that any results occurring after the date that a sample, resulting in a disqualification, was collected are automatically disqualified. It also provides that when one team member has been notified of a possible anti-doping rule violation in the course of an *Event* that the team shall be subject to target testing during that *Event.* The *Code* permits sport organisations to disqualify teams if one or more members of a team are found to have violated the anti-doping rules.

APPEALS

Athletes and others may appeal a range of decisions including those pertaining to violations, sanctions, and therapeutic use exemptions. But before appeals can be carried to an outside body the mechanisms available in a sport organisation must be exhausted. International-level athletes may appeal directly to the Court of Arbitration for Sport (CAS), national level athletes' appeals may be directed to a body established for such a purpose by a national anti-doping organisation.

OTHER ISSUES

The *Code* specifies that athletes, their national anti-doping organisations, and their respective national and international federations must be notified of adverse analytical findings or anti-doping rule violations in accordance with specific guidelines. Sport organisations must publicly disclose the results of violations within a certain time frame; certain athletes must provide current location information and such information must be co-ordinated with WADA, international federations and national anti-doping organisations. Most of these requirements and provisions will be easily met by FINA; some initial confusion may result as national anti-doping organisations and international federations seek to coordinate athlete whereabouts information. All anti-doping organisations must publish a general statistical report of their anti-doping activities and provide a copy for WADA. WADA is mandated to act as a central clearing house for testing data. It is reasonable, in my view, to expect some initial confusion as this process begins.

DOPING CONTROL RESPONSIBILITIES

While recognising that a number of agencies may be involved in conducting doping controls the *Code* specifies that responsibility for testing at international events falls initially to the international organisation which serves as the ruling body for the event ... e.g. FINA at a World Championships. If the international body decides not to conduct testing then the national anti-doping organisation of the country where the event takes place may conduct testing. The *Code* recommends that out-of-competition testing be coordinated by WADA to minimise confusion and unnecessary duplication of testing efforts. Laudable though this may be, it is still likely that confusion will emerge in this area given the immense logistical, geographical and linguistic barriers that may complicate this process. Responsibility for the management of results and the conduct of hearings rests with the organisation that initiates and performs sample collections. Finally the *Code* indicates that all signatories will recognise and respect the results, adjudications and therapeutic use exemptions of all other signatories. This latter provision will be a significant step forward in ensuring a much greater degree of harmonisation of anti-doping activities.

The importance of education and research is emphasised in that part of the *Code* which mandates that anti-doping organisations shall "plan, implement and monitor information and education programs". Unfortunately anti-doping programs have been dominated by expensive, testing activities designed to deter and detect doping there is a long-overdue need to develop and deliver high quality educational initiatives which will stimulate the development of an anti-doping ethos among younger athletes.

ROLES & RESPONSIBILITIES

The specific responsibilities of all members of the sport community are clearly identified in the *Code*. International federations must implement the *Code* and its provisions and ensure that their own rules and regulations, and the rules and activities of the national federations, are in compliance. International federations are encouraged to withhold funds from national federations that are not in compliance with the *Code*, and to facilitate the Independent Observer process. In addition federations must ensure that all athletes and support personnel recognise and agree to be bound by the *Code.*

Athletes are expected to be familiar with all rules and regulations, to be available for sample collection, to be responsible in terms of their use of medications and other products, and in particular to ensure that any medical treatment received does not contravene or otherwise violate the anti-doping rules.

Athlete support personnel are expected to

understand the rules, cooperate with the athlete-testing program and, most importantly, to use their influence to foster appropriate sporting and competitor values among the athletes they train and counsel.

Governments are requested to address issues relating to the availability of prohibited substances and prohibited methods, facilitate access to doping control officials and organisations including WADA, to address the availability of nutritional supplements.

SOME FINAL THOUGHTS

I would encourage everyone to review the *Code* carefully and to understand its implications. It will, for the first time, permit a globally coordinated and harmonised approach to anti-doping activities. Systems and structures will need to be changed to facilitate a unified approach. Its adoption signals the determination of the international sport community to confront the problem of doping in a manner that is both forceful and thoughtful.

At the same time the *Code* should serve to remind us of the challenges we face in addressing this vexing issue and of our own personal responsibilities as athletes, coaches or sport officials to exemplify an approach to sport which is consistent with the highest standards of sportsmanship and fair play. Rules and regulations, sophisticated tests and innovative educational campaigns are necessary but they are not sufficient ... It will be personal resolve and individual commitment that will ultimately secure doping-free sport.

To complete this article and to help everyone with the application of this Code, "The User's Guide for Athletes, Coaches & Team Physicians" by Dr Margo Mountjoy, FINA Sports Medicine Committee Chairman will be published in our next edition.

MORAVCOVA, CODE FOR SUCCESS

The Slovakian star combines top-level performances with social commitments

By Pedro Adrega
Editor-in-Chief of "FINA Aquatics World"

As with many heroes, Martina Moravcova has a dramatic episode in her life ... something she does not remember – but certainly a memory that her parents will never forget. One of today's biggest swimming stars was born a two-month premature baby and had to fight to survive in the early months of 1976.

As a child

But the fragile and sick baby went on to achieve her parents' dream to become an Olympian swimmer. At the 1992 Olympic Games in Barcelona, she was the youngest athlete of the Czechoslovakian team. Today, following the split of the country, Moravcova is an impressive symbol of the "new" Slovakia.

Besides her competitive successes, she remains the same nice and friendly girl that won her first medal at 10 and likes to say, "*Attitude is a little thing that makes a BIG difference*". Known by her generosity, she is often called to support humanitarian causes and was chosen by the national UNICEF committee of Slovakia to be the "2003 Public Figure" for the campaign "A drop of Water for Ethiopia".

Married in 2002 to a former tennis player, Martina lives and trains in Dallas (USA) where she earned her degree in 2000, a Master of Arts in Applied Economics at Southern Methodist University.

A special day

For "FINA Aquatics World", the Slovakian star accepted to unveil some of her hopes, frustrations and daily routines. Before the two next major rendezvous – the 10th FINA World Championships in Barcelona (July 2003) and the 2004 Olympic Games in Athens – a portrait of a versatile swimmer who obtained memorable performances in Freestyle, Butterfly and Individual Medley! A vision of a successful and happy person that carries her favourite sport in every pore of the skin and likes to finish the letters by an original "*swim-cerely*".

OG, Sydney 2000 (left)

A big collection of medals


A fighter in the water


The image of happiness

FINA Aquatics World (F.A.W.): At the FINA World Championships (50m) or Olympic Games you are always amongst medallists, but you never earned a gold medal. When can the world expect to see a gold medal, or perhaps several gold medals being presented to you?

Martina Moravcova (M.M.): Well, I cannot answer this for sure. I always strive for the gold but so far I have always fallen short by few hundredths or tenths of a second. Anyway, I have some more chances in the next few years.

F.A.W.: You are one of the stars of the FINA Swimming World Cup. What means this competition for you?

M.M.: I love racing at the World Cup meets. I also like the fact that I am financially awarded for winning at these meets. It is a great motivation. I am 27 years old and I need to monetarily support myself. Swimming is unfortunately very undervalued, but I hope that the World Cup series is the beginning of the inevitable change for this sport to keep the standard and interest of fans and public. I believe that more money in a particular sport generates more stars, thus the sport and the athletes become more attractive for the viewers and public.

F.A.W.: What do you think about the doping problem and the FINA policy on that matter?

M.M.: I wish we had much more testing implemented not only during the meets but also during out-of-competition, when swimmers stay home or go to extend training camps away. I hope and want to believe that I race against 'clean' competitors or I lose only to 'clean' swimmers. I do not want to be in a situation like at the World Championships in Perth when I finished 3rd in the 200m IM behind two Chinese swimmers who were caught for taking doping only a few months later. It was nice that everyone considered me as the winner of this race (and the crowd made it evident during the award ceremony) yet I still have 'only' a bronze medal.

F.A.W.: You are a hero in Slovakia. What changed in terms of swimming in your country after your performances?

M.M.: More young people, especially girls want to be like me. I am their big idol. My success definitely attracted lots of attention to swimming in my country. Yet, I wish it would also reflect more in politics and these people 'up there' would realise that if we want to have great swimmers we need to create conditions for them. For example, in my city we have only one 25m indoor pool, it is 70 years old and without filtration and even my success did not help to change it much. It's a matter of a short time for this pool to be closed and many young promising swimmers will have to either give up their dreams or move away and pursue those dreams somewhere else.

F.A.W.: You are training and living in Dallas (USA). How was the adaptation?

M.M.: Hard and easy. Hard because I am very close with my family and I have to leave their 'safe net' but also easy because I found a great team of people to work with and share my passion for swimming. I love Dallas and SMU (Southern Methodist University, where Flavia Rigamonti (SUI), Alenka Kejzar (SLO), Alexandra Miciul (POL), and the young Slovakian hope Martina Hrdinova are also training). It is the right place for me. Not too big, with a family atmosphere.

F.A.W.: What is a routine day for Martina Moravcova?

M.M.: I train with the SMU's women's swim team. I am also a volunteer assistant coach. We swim from 6 to 8 o'clock in the morning and again for two hours in the afternoon. I life three times a week for an hour and I also do 30 minutes two times per week of dry land and two times per week Medicine Ball. I like to have different training sets in the water. Weight lifting and dry land exercises add variety to the routine as well.

F.A.W.: You are an example of "variety" in swimming, but what is your favourite stroke/distance?

M.M.: My favourite strokes are Freestyle and Butterfly, yet only short distances (up to 200m Freestyle and 100m Butterfly).

F.A.W.: Being married, how do you coordinate your family life with the stress of a rigorous competition schedule?

M.M.: Very easily. I have a very understanding husband who was an athlete himself – a tennis player during his college years. He understands what sport gives and what it takes. He respects my devotion to swimming and also is really proud of my accomplishments.

F.A.W.: What are your best memories in your competitive and personal life?

M.M.: The Olympics in Sydney and getting married last year.

Date of Birth: 16th January 1976
Place of Birth: Piestany
Hometown: Piestany
Residence: Dallas, Texas (USA)
Weight: 62kg

Height: 1.72m
Club: Kupele Piestany/SMU
Coach: Steve Collins

Top Performances:

1991 LC Junior European Championships
- 2nd 100m Freestyle
- 3rd 4x100m Freestyle Relay

1992 Olympic Games
- 18th 100m Freestyle 57.19
- 19th 100m Butterfly 1:02.11

1993 SC World Championships
- 4th 100m Freestyle 54.52
- 4th 200m Freestyle 1:58.21

1994 LC World Championships
- 14th 200m Freestyle 2:03.21

1995 LC European Championships
- 5th 100m Freestyle 56.73
- 7th 200m Freestyle 2:02.60

1995 SC World Championships
- 2nd 200m IM 2:11.91
- 3rd 200m Freestyle 1:56.61
- 6th 100m Freestyle 55.27

1996 Olympic Games
- 9th 200m Freestyle 2:00.96
- 13th 200m IM 2:17.40
- 15th 100m Freestyle 56.47

1997 LC European Championships
- 2nd 100m Freestyle 55.46
- 2nd 100m Butterfly 59.74
- 2nd 200m IM 2:15.02
- 4th 200m Freestyle 2:00.34

1997 SC World Championships
- 3rd 200m Freestyle 1:56.66
- 4th 100m Freestyle 54.04
- 5th 100m Butterfly 58.58

1998 LC World Championships
- 2nd 100m Freestyle 55.09
- 2nd 200m Freestyle 1:59.61
- 3rd 200m IM 2:14.26
- 6th 100m Butterfly 59.47

1998 SC European Championships
- 1st 200m Freestyle 1:55.12
- 1st 100m Butterfly 57.72
- 1st 100m IM 1:00.43
- 2nd 100m Freestyle 53.94

1999 SC World Championships
- 1st 200m Freestyle 1:56.11
- 1st 100m IM 1:00.20
- 1st 200m IM 2:08.55
- 4th 100m Freestyle 53.79

1999 SC European Championships
- 1st 200m Freestyle 1:56.28
- 1st 100m IM 1:00.78
- 2nd 200m IM 2:09.25
- 4th 100m Freestyle 54.09

2000 Olympic Games
- 2nd 200m Freestyle 1:58.21
- 2nd 100m Butterfly 57.97
- 5th 50m Freestyle 25.24
- 5th 100m Freestyle 54.72

2000 LC European Championships
- 1st 100m Butterfly 58.72
- 2nd 100m Freestyle 54.45
- 2nd 200m Freestyle 2:00.08
- 3rd 50m Butterfly 26.98

2000 SC World Championships
- 1st 100m IM 59.71
- 2nd 200m Freestyle 1:56.46
- 2nd 200m IM 2:08.98
- 3rd 100m Freestyle 53.88

2000 SC European Championships
- 1st 200m Freestyle 1:56.51
- 1st 100m Butterfly 57.54
- 1st 100m IM 1:00.58
- 3rd 100m Freestyle 53.97

2001 LC World Championships
- 4th 100m Freestyle 55.12
- 5th 200m Freestyle 1:59.29
- 13th 50m Freestyle 25.77

2001 SC European Championships
- 1st 200m Freestyle 1:54.74
- 1st 100m Butterfly 57.20
- 1st 100m IM 1:00.16
- 2nd 100m Freestyle 52.97

2002 SC World Championships
- 1st 100m Butterfly 57.04
- 1st 100m IM 59.91
- 2nd 100m Freestyle 52.96

2002 LC European Championships
- 1st 100m Butterfly 57.20
- 2nd 50m Freestyle 25.09
- 2nd 100m Freestyle 54.61

2002 SC European Championships
- 1st 100m Freestyle 53.66
- 1st 100m Butterfly 56.82
- 1st 100m IM 1:00.21

FINA Swimming World Cup

2000/2001 – overall winner in eight distances
2001/2002 – 24 victories, overall winner
2002/2003 – 8 victories, 7th overall place

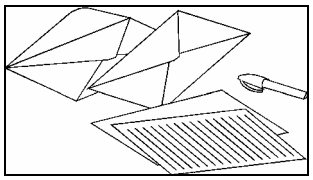
FINA CALENDAR

FINA Championships, World Cups & Olympic Games
2003

Aug 9	Marathon Swimming World Cup No.7	Atlantic City	USA
Aug 16	Marathon Swimming World Cup No.8	Moscow	RUS
Aug 24	Marathon Swimming World Cup No.9	Capri-Napoli	ITA
Aug 30	Marathon Swimming World Cup No.10	Ohrid	MKD
Sep 26	Marathon Swimming World Cup No.11	Alexandria	EGY
Nov 1	Marathon Swimming World Cup No.12	Cancun	MEX
Nov 24-25	Swimming World Cup No.1	Daejon	KOR
Nov 28-30	Swimming World Cup No.2	Melbourne	AUS
Dec 5-7	Swimming World Cup No.3	Durban	RSA

2004

Jan 9-10	Swimming World Cup No.4	Europe (2)	
Jan 13-14	Swimming World Cup No.5	Europe (2)	
Jan 17-18	Swimming World Cup No.6	Europe (2)	
Jan 29-30	Swimming World Cup No.7	New York	USA
Feb 2-3	Swimming World Cup No.8	Mexico City	MEX
Feb 6-8	Swimming World Cup No.9	Rio de Janeiro	BRA
Aug 13-29	Olympic Games	Athens	GRE
Oct 7-11	7th FINA World Swimming Championships (25m)	Indianapolis	USA



Letters to the Editor

Dear Michael,

Thank you for the opportunity to attend the recent ASCTA Conference and Expo on the Gold Coast, I found it to be professional, informative and even inspirational. I am looking forward to completing the Level 2 Assignment and making practical a number of new ideas and objectives that I learned on the course.

Great presentations by all speakers however I felt those who were able to share "common" experiences whether positive or negative managed to reach a number of the coaches who have not yet experienced International success but were made to feel they were not miles away from the dream by being the best they can be.

The opportunity to network was fantastic. While on the Gold Coast I attended a number of sessions with Dennis Cotterell (and Bob Bowman) and was able to get up to the Southport School to have a look at the facility British Swimming are using for their Youth Development Program which we at AIB Tigers will be sending a swimmer to later in the year.

In Perth I spent the week with both Bernie Mulroy (City of Perth) and Grant Stolweinder (West Coast) whose insight into "Senior" coaching was invaluable. Furthermore it is reassuring to know that what we're doing out here in Jersey is both compatible and competitive with the rest of Australia (and the Swimming World).

Next year I plan to have a team of swimmers travel out to Australia to compete at the National Age Groups in Perth and hope to once again attend the Conference. I would also like to take this opportunity to offer both my and AIB Tigers Head Coach Paul du Feu (GB Youth Olympic and World Class Potential Coach) availability as speakers on the success of our Age Group program ... possibly in a similar context to that of Canadian Justin Finney's presentation this year.

As a young Australian swimming coach working in Europe I feel my experiences and successes can be shared as a part-presentation relating to Job Searching, Career Opportunity and Self Development ... something along the concept of "making it happen" for the young and new coaches out there.

Please find below a (very) brief CV of our Club and its current program. Your thoughts?

AIB Tigers (Jersey) Swimming Club Channel Islands, UK. Founded 1973
2 full-time Professional Coaches
650 Members (including Learn-to-Swim)
100+ Squad swimmers
75 GB National Qualifying swimmers (producing 43 medals)
8 Commonwealth Games Swimmers (1 medal)
1 Olympian Current British Junior Record Holder (200FL) and GB Youth Olympic Team Member (and Head Coach).
Top Team, Male and Female Swimmer of the Meet, Island Games 2001 (Small Nations International).
Squads…
Cubs: Skills Development 6yrs+
Cougars: Squad Introduction 8yrs+
NAG: Junior National 10yrs+
Youth: Youth National 13yrs+
Seniors: Performance 18yrs+
Fitness: Masters/Social 13yrs+
Hope to hear from you soon,
Once again "Thank you" to all who made the conference a success.
Kind Regards,
Matt Magee
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Phone: 00 11 44 1534 500201
Fax: 00 11 44 1534 500136
Email: tigers@swim-fast.co.uk or: mattmagee99@yahoo.com.au

To: Michael
From: Craig Allatt

I received my ASCTA membership renewal last week and this brought a couple of issues to the top of my mind. While I generally enjoy the ASCTA magazine Swimming in Australia, I was a little miffed because the changes highlighted in the membership renewal pack totally ignores masters coaches and I would like masters swimming to be recognised. Swimming is an activity that is done by all age groups, from the young to the very old. As coaches, we need to facilitate and encourage swimming as a life-long activity, not just something juniors on their way to becoming Olympic champions do.

A bit about myself. I swam as a child, semi-seriously with the Bowral Swimming Club in the 1980s, and enjoyed the inter-club and regional competitions I went to. However, we only had a

parent interested in swimming as a coach and the pool was open only five months of the year.

When I went to university, I trained with the university swimming club, which was not affiliated with ASI, but we had a Level 3 coach (who was also a student at the uni) to coach us. I really enjoyed this experience and realised the value of a well-trained coach.

On leaving uni I asked this coach's advice regarding how to continue with swimming as I enjoyed training in a club environment. He recommended joining a masters club (this was the first time I heard about masters swimming).

When I came to Canberra in 1995 I looked up masters swimming clubs, discovered AUSSI masters and have been swimming with them ever since.

In 2001 my club needed another coach. So I originally did an ASI Level 1 course, because they are run frequently throughout the year, as I felt I should have some training before I took on the role of coach. I then did the next available L1M course. Since then I have become heavily involved in masters swimming.

Anyway, I have noticed a number of things...

- My AUSSI Masters club, which consists of 60 people, has only 5 people who swam as children. The other 55 people swam recreationally, and joined masters swimming for a variety of reasons, but they do not have a swimming background.
- When I did my Level 1 course, the tutor coach was amazed that anybody would only want to coach masters swimmers. They recommended I find a junior club; however, I am totally uninterested in coaching junior swimmers.
- From reading AUSSI Annual Reports, the ASCTA/ASI Memorandum of Understanding in the last *Swimming in Australia* (which only mentions junior and elite swimming) and listening to comments generally, there appears to be a great divide between junior swimming and adult swimming. Recently, when trying to get information from the Australian Sports Commission I discovered their entire focus was on junior and elite sport. Sport is not just for the young and elite.
- I read in the newspaper that 17% of people in Canberra swam regularly (that is about 51,000); however, we can only get 150 to join masters swimming clubs in Canberra. This is due to a number of reasons such as training times (due to pool availability), and people's impressions of swimming clubs being only for "good swimmers".
- There are a number of very large ASI swimming clubs in Canberra, but this does not spill over into masters swimming.

The end result of all these observations is that I am disappointed that when junior swimmers leave the sport, they leave it entirely. As adults they do not return and continue their association with the sport in an organised manner.

Part of the problem as I see it is the focus of ASI and ASCTA on junior and elite athletes, and the movement of athletes from being juniors to elite.

If you don't make the grade of an elite athlete you leave the sport! What about swimming for fitness and fun? You can still train very seriously when doing this. What about friendship? You can still meet a lot of great people who swim as adults.

To be a successful swimmer does not necessarily mean you must become an Olympic champion. Somehow coaches of junior squads need to recognise this and direct people to include masters swimming in their swimming career plan.

Also junior coaching often does not take masters athletes seriously. If you look at Australian record times for masters and world record times for masters, you see that there are some very respectable times. I'm amazed that some 50-year-olds can swim their age as their 100m Freestyle time.

In recognising that the swimming world consists of more than just junior and elite swimmers and coaches, we need to identify what makes masters swimming and masters coaches different to junior swimming and junior coaches.

- Masters coaches are also swimmers – we alternate our roles as coaches and coached.
- We do not necessarily have head coaches. My club organises it so that one person coaches one particular night during the week.

- As coaches, we may have general goals for the season and an idea of what types of programs we will do when. However, programs are open to huge changes because we never know who will turn up because adults lead busy lives. (Adults tend to swim 1-3 times a week.)
- Adults do not react in the same way as children. So we have to use different people management strategies.
- Adult swimmers have enormous differences in motivations for swimming, which adds another layer of complication. (About 80% of our members are totally uninterested in competition.)
- We can have huge variations in skills, fitness and injury levels in our squads and so have to design very flexible programs. Often we cross the line from being coaches to being teachers of swimming because people cannot swim a stroke.

As a masters coach, I would like to see...

- The profile of masters swimming raised
- Masters swimming taken seriously
- Coaches looking at a swimmers entire swimming career and encouraging junior swimmers into becoming masters swimmers; and
- ASCTA meeting my needs as a masters swimming coach rather than focusing entirely on junior and elite swimming. (There are many similarities between junior and elite swimming, but also some huge differences. It is the differences that are never covered.)

Coaching is a rewarding experience no matter what level you operate at. However, the swimming coaching **family** is a bit fragmented.

I would like to see the **family** all working together and looking after swimmers from, literally, the cradle to the grave.

Whether we are junior, elite or masters coaches, we are standing around the same pool and we are coaching the same swimmers at different points in their swimming career.

Learn-to-Swim

WHERE IS YOUR CHILD NOW????

My name is John Robinson, Level 2 Skills Coach and Operator of The Starfish School in Mareeba and have been in the aquatic industry all my life in some way, shape or form. When asked to do a piece on **anything involving LTS**, my initial response was the usual *"why me?"* ... *"what can I write that can possibly interest aquatic professionals, without reproducing something I have read or picked up from other coaches or swim teachers?"*

I came up with a couple of ideas!!

What I chose to write about is the role of the parent in the scheme of things – sparked by a very recent story of a young child needing to be resuscitated by lifeguards at the new Cairns unfenced water park.

MY QUESTION IS ... WHERE WAS THE PARENT???

You could rattle off dozens of questions but the most pertinent question is ... what was the parent doing in the moments leading up to the discovery of the child face down?

Since the beginning of time, children and water have been a dangerous mix and with the growing phenomenon of the backyard pool, there came fencing with entry devices that an adult would have to have a degree or diploma in mechanical engineering to work out. But – to a child or toddler – a challenge – and in a lot of tragic cases challenges that were only too easily conquered.

Floaties, kickboards, blow-up toys and devices, needles, lifejackets, fences, brothers and sisters, aunts and uncles, grandparents, LTS teachers, school teachers, lifeguards and other members of the human race – and even the family dog – are all deemed by some parents capable of keeping their precious child safe in and around water.

In my extensive experience – having been around water all my life, both professionally and recreationally – this is a fallacy. The child is only safe under the **TRUE** supervision of mum or dad and then there are circumstances! Mums

and Dads who take the kids for a fun day in or around water need to remember their role and responsibility.

As a Swim Teacher/Coach, Pool Manager, ex-Lifeguard and surfer, and as a parent, I have been involved in many scenarios and I cannot understand the thought process that is going on in some parents' minds. With the emphasis parents have on LTS and with the education process of LTS campaigns, I feel some real emphasis needs to be on parent education. Some of the children I have resuscitated have been **water safe**. However, these children are still candidates for drowning.

As LTS Teachers we tell parents ... Yes, little Johnny is capable of getting back to the edge and his skills are improving. But, do we stress firmly enough the fact nobody is completely safe in the aquatic environment ... CHILD or ADULT?

Do we, as professionals, need to add to our advertising posters an aggressive campaign with an adult education emphasis? One of the most effective signs I have seen and utilised is...

WHERE IS YOUR CHILD NOW?

The "Do the Five" campaign does have messages and is cute but I feel we need to use more of a scare tactic, in-your-face approach.

As an ex-Lifeguard, I know the feeling of a limp little body in my arms and the taste of another's stomach contents in my mouth after a successful rescue. Let's not let too many more have to experience the feeling. Let us, as an industry, be **pro-active**.

There is no preparation or conditioning which can 100% combat panic or the surprise factor. Anyone who thinks they can teach children (or adults for that matter) to be totally 100% water safe has not tasted all the elements. I have been involved in exercises where all spectators are pre-warned as to what they are about to witness and, after witnessing the emergency unfold in stages such as ... PANICKED PARENT – RESCUE – SHOUTED COMMANDS – RESUSCITATION IN PROGRESS – AMBULANCE DEPARTING WITH PATIENT BEING WORKED ON ... you see hand grips tighten between partners, also between parents and children. It was only a mock exercise but the shock factor was evident. You would then see a different scene around the pool or on the beach as the reality of it could happen hits home.

Which justification would you rather hear from a parent? *"I only looked away for a moment and when I looked back he was gone"* ... OR ... *"I'm sorry, I can't look at you while we discuss Linda's bad personality or Trevor's drinking problem"* as I am watching my children.

I think we need to run an education program aimed at parents, reminding them of...

WHO IS RESPONSIBLE?
WHAT DO YOU THINK?

TRANSITION RHYMES & ACTIVITIES

By Naomi Smith

For the purpose of this article, the transition class is made up of children who have graduated out of the infant aquatic or parent /child classes and are now in a class all by themselves! For three and four year olds this lesson can be frightening and for the teacher a real headache. Here are some tips to make the lesson run a little easier.

Step 1...

Begin the lesson with an introductory activity – "Jumping up and down" – "It's raining, it's pouring"

Step 2...

Divide your class time into various activities – this will make the lesson go quickly and you will always have a set of activities to complete.

An example of this is as follows...

- Breath control – e.g. bubbling games, face down holding on to the bar – "look at the fish UNDER the water"
- Once confidence has been developed, take each child for a swim from the bar to you – include underwater swimming in shallow water
- Kicking work, using the noodles – 1 noodle hold the four children across or each child with a noddle – kicking "make a butterfly or aeroplane" with the boards – tell children to splash their toes, kick-kick-kick – kicking on their back and front
- Take children for another swim – encourage a good kicking action with their face down
- Deep water work – monkey grip to half way – have children sit on the side – leaning

forward from the side, swim to you – deep water work can also be done using the mat
- Moving back to shallow end for FLOATING work
- Looking UNDER activities, using toys and rings
- Concluding activity

Remember...

- Fun rhyming activities
- Imaginative play during lessons
- Relate to super heroes or fun characters

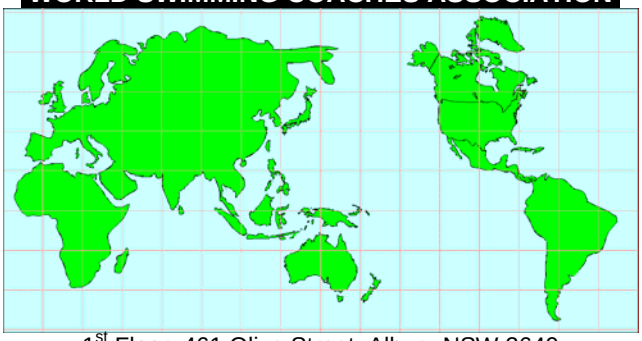
Examples include...

- (Arm action)
  My arms go round – I reach up high
  Though the water – paint the sky
- "Wake up Jeff" – from the Wiggles, on the large mat
- "Pretend this board is your teddy bear – give him a big hug – don't let go of your teddy!"
- Standing on the side of the pool – encouraging children to jump in
  "As tall as a house, as small as a mouse, as thin as a pin *(child's name)* jump in"
- Jack be nimble, Jack be quick – Jack jumped over the candlestick (noodle)
- Buzz light year – "to INFINITY and beyond" jump in
- Sit children on the side, give them each a coloured ball – a magic ball ... when you hold this ball, you have powers to float ... throw the magic ball down towards the stairs ... have the child, one at a time, fall forward into you then position them towards the stairs and have them swim to their ball ... out and repeat
- Make a rainbow tunnel, using the noodles in the bar ... "Who can swim through my rainbow tunnel?"
- Fun game of colours, using the noodle...
  "When I call out GREEN, go forward"
  "When I call out RED stop and spin around"
  "When I call out YELLOW go real fast"
  "When I call out BLUE stop, float on your back and show me your toes"
- Fun game of fruit – a good warm-up game...
  "When I say BANANAS, jump up and down"
  "When I say APPLES, blow bubbles"
  "When I say CHERRIES, under you go"

Things to remember...

- Encourage children to blow **loud** bubbles ... hopefully they will begin expelling all air from their nose and mouth
- When teaching **floating**, ensure that the child can stand on their own after the float ... this is an activity which is as important as the float itself...
  "Can you see the star fish on the wall?"
  "What colour star fish would you like to be today?"
- Teach floating in both **shallow** and **deep** water
- Teach rolling from their front to their back and from their back to their front ... for the more experienced, can you float face down and then roll onto your back?
- Gently push the child to swim on his or her own ... start over small distances to develop confidence ... from the side of the pool to you, from the bar to you, from the bar to the blue box ... over time, increase distance
- When jumping into the deep end, always encourage swimming back to the wall ... encourage children to grab the wall and climb out

WSCA NEWSLETTER
WORLD SWIMMING COACHES ASSOCIATION



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Vol 03 Issue 2

WHAT HAS WSCA DONE DURING THE PAST YEAR?

Since I have become President, WSCA started and has continued to work on a number of important projects for our sport of swimming.

ANTI-DOPING CAMPAIGN

"Watch Dog", John Leonard (USA), assisted by Cecil Colwin (CAN) and Forbes Carlile (AUS) has kept an eye on developments. John continued sending updates to coaches, world wide, by email. He also met with FINA President Mustapha Larfaoui to discuss "next steps to be taken" at the invitation from Mr Larfaoui, which we regard as a tribute to his flexibility and cooperative spirit regarding anti-doping efforts. John Leonard's suggestions were passed on to WADA and in April 2002 Mr Richard Pound, Director of WADA, announced at a press conference in Montreal the formation of a Coaches/Athletes panel to start an "Investigative Unit". Unfortunately, this Unit has not been able to start its work due to lack of finances. A further suggestion made by John Leonard, the requirement to put in place EPO testing within 24 hours of any world record being broken, was voted on and agreed to by the FINA Bureau in November 2002.

WSCA-WORLDWIDE

While travelling to various Top Competitions I have been able to interest a number of leading coaches in various parts of the world in starting "WSCA-Sections". South-American, (Southern-) African and many European Coaches and Coaches Associations have shown a great interest in joining WSCA and being part of the Swimming Coaches fraternity.

Unfortunately, WSCA, again due to financial problems, can for the time being only offer knowledge and the effort of its members in assisting less fortunate coaches and swimming programs in emerging countries.

WSCA-EUROPE

After being selected as President of WSCA, I decided that restarting recruiting Coaches and Coaches Organisations in Europe would be my priority. At both European Championships, Berlin (LC) and Riesa (SC), as well as at Member Coaches Associations (Germany, Great Britain), information meetings were held, resulting in a slow but steady increase in our membership. Particularly national coaches associations (Greece, Spain, Portugal and France) have been showing a great interest. WSCA-Europe intend to, when our membership has increased, to introduce our own Web Site with links to all National European Coaches Associations who are members. We further would like to offer services to individual members. This costs money – which we do not have – because our membership is still too small. In other words, we have to increase our membership first before we can start supplying services.

As soon as more National Coaches Associations become members, our thoughts, ideas and influence can be pooled in order to make WSCA a true professional body for Coaches.

HARMONISING SWIMMING COACHES EDUCATION

Dr Bodo Ungerechts (GER), in cooperation with Peter Daland (USA) (Chairman FINA Coaches Commission), is surveying countries around the world in a first step in finding ways to have the various existing coaches certification systems recognised in all countries of the world. More input from as many national coaching associations as possible would be appreciated.

WSCA NEWSLETTERS

Five newsletters produced by the WSCA-America office have been sent out to all members, either by post or by email. We would like to internationalise our newsletter and would appreciate more input from individual and nation members. Particularly innovative ideas, methods and studies are appreciated.

We realise that it has been, and still is, difficult for a large number of coaches around the world to fully understand articles written in English. With this in mind, we have appealed to FINA to help WSCA financially, in order for us to have articles and other material translated into and from the English language. Also, we would appreciate an input from non-English speaking countries in order for us to be able to

"open the door to more swimming knowledge" to Coaches around the world.

WSCA COACHES CLINICS

Clinics were organised by WSCA-Oceania in Mexico (Coach Michael Piper), Brazil (Coach Michael Ursu), Qatar and Thailand (Coach Buddy Portier) and Singapore (Coach Ralph Richard). In addition, Coach John Leonard, WSCA-Americas, conducted a clinic in Kenya.

WSCA intends to organise its next "Gold Medal Clinic 2005" in Mexico. It is intended that both Spanish and English will be the official languages at this clinic.

COOPERATION WITH INTERNATIONAL SWIMMING ORGANISATIONS

In the future, WSCA hopes to cooperate with Federation International de Natation Amateur (FINA), its Coaches Commission and Regional Bodies – e.g. LEN, Pan Pac – at various levels. During 2002 WSCA has contacted FINA, making a number of suggestions on issues like World Swimming Cup, Coaching Seminars (particularly in Africa), Anti-Doping and of course Coaches Certification. WSCA intends to intensify this contact and make available the particular knowledge and experience swimming coaches have.

RECRUITING MEMBERS

We have to remain idealists and increase the membership of our organisation. Only then will we have more clout (influence) in dealing with FINA, LEN and other amateur bodies for the betterment of the sport of swimming.

Reproduced from SWIM, January/February 2003

HEALTH *Waves*

By Jessica Seaton, D.C.
Chairman, USMS Sports Medicine Committee

Question: I have recently increased my daily volume of swimming and I have experienced some soreness in my elbows. I have heard swimmers complain about shoulder and knee pain, but never about elbow pain. I know there is such a thing as ***tennis elbow****. Is there also* ***swimmer's elbow****?"*

Most swimming injuries are related to overuse and/or technique problems. Depending on the symptoms (pain, pain and weakness, weakness with no pain, decrease in range of motion, where in the stroke the problem occurs) and the location of the problem, the diagnosis will vary. While the actual elbow joints or ligaments may be involved, more common are problems with the muscles and tendons.

If the pain is located on the medial side of the elbow (the **funny bone** side) or the medial epicondyle, the primary muscles involved are the wrist flexors and forearm pronators. These muscles are used in most parts of the pull phase for all strokes. If you have increased your workouts and are using your hands more than your forearms during the pull phase, you could be overusing your wrist flexors. Fist drills (or drills using the anti-paddles) should help correct this.

If the back of the elbow is painful, the usual culprit is the triceps muscle. The pain may be brought on by increased Breaststroke pull-downs, hoisting yourself out of the pool multiple times (as in push-ups on the side of the pool), or exaggerating the finish of your stroke.

If the pain is located on the lateral side of the elbow (the **tennis elbow** side) or lateral epicondyle, then the muscles involved are the wrist extensors, forearm supinators, and – to a lesser extent – elbow flexors. Your arms may not be relaxed during your Freestyle or Butterfly recovery. You also might be injuring your muscles by a forceful arm extension at the beginning of the pull phase of Freestyle.

In the case of weakness in any of the muscles, one must rule out nerve entrapment syndromes of the radial, ulnar or median nerve. This can occur at various locations around the elbow.

A good treatment program involves...

- Correcting the stroke problems
- Passive treatment such as myofascial release techniques, massage and ultrasounds
- Appropriate rehabilitation exercises

Chiropractic adjustments of the elbow joints are helpful in many instances, as are homeopathic or herbal ointments and creams. Some swimmers are also helped during the acute phase by wearing a tennis elbow brace while swimming.

◆◆◆

Ed Nessel, R.Ph., M.S., M.PH, Pharm.D.
Head Coach, Rutgers Masters Swim Team

Yes, there actually is a variant of what you called **swimmer's elbow**. For several reasons, the tendons attached to the **funny bone** area can have great stress put on them ... as such, they first start to **bark** a little upon use. If the stress continues, they will then **hold** the pain until long after the swimming. Finally, noticeable weakness in the hand, wrist and forearm may come into play along with the original pain.

If the forearm muscles are not made strong enough, great stress is placed upon the tendons when moving water. We see what is called **Breaststroke Elbow** (or **Golfer's Elbow**) in the inner aspect of the elbow. Excess training in

Breaststroke without the proper conditioning of **all** of the arm muscles can lead to what I have mentioned.

We also see great strain placed upon the tendons of the medial elbow area with the type of Freestyle known as the **Australian Freestyle**. This technique requires even more pressure to be placed on both the elbows (to be kept high for much of the stroke) and the shoulders.

Treatment begins with stretching the forearm muscles (by bending the fingers backward while pointing them to the floor). You can take anti-inflammatory medications to lessen the pain and inflammation in the area. Weight training to strengthen all the muscles of the upper extremity with special attention to those of the wrist will also help.

Of course, rest – or at least diminished usage – is probably the best medicine.

SWIM for FITNESS

Everything you ever wanted to know

KICKING – Critic's Choice

By Scott Rabalais

Fitness Editor for SWIM, is a collegiate and Masters Swim Coach in Savannah, Ga.

Question: What are the four most common words spoken by frustrated flutter kickers?
Answer: "I'm not going anywhere."

Adult swimmers face a special set of challenges when learning and attempting to improve their Freestyle kick. One of the challenges is deciding which kicking position will provide the maximum benefit. There are four commonly used kicking positions, each with its advantages and disadvantages with regard to both conditioning and technique.

Each kicking position is rated as follows with regard to conditioning and technique benefits.

For conditioning ... the question posed is, *"What is the likelihood of improving one's leg strength and cardiovascular abilities in this kicking position?"*

For technical improvement ... the question offered is, *"How does this kicking position simulate the actual kicking and body position during Freestyle?"*

For both conditioning and technique ... four kicking positions as they relate to the Freestyle stroke are scored from poor to great ... 1 Poor; 2 Fair; 3 Good, 4 Great.

POSITION NO.1 – ON FRONT, WITH BOARD

In a popularity test, this position wins hands down. It adds variety to the workout and, with the use of the kickboard, usually means an opportunity to socialise and view something other than a black line.

Conditioning: With other swimmers and the Pace Clock in clear view, the swimmer is often highly motivated in board kicking. However, neck and shoulders can easily become sore in such a strained position. *Score: 3.*

Technique: While the board gives the swimmer some upper-body support, the swimmer is unable to practice balancing skill. Also, rotation effects do not come into play as the swimmer remains in a flat position. *Score: 2. Overall Score: 5.*

POSITION NO.2 – ON BACK, NO BOARD

This is often the most relaxed position for flutter kicking, with the swimmer flat on his or her back, eyes toward the ceiling, enjoying relaxed breathing and arms extended over the head.

Conditioning: Engages the hamstring muscle more than the frontal position and may not be as specific to the Freestyle stroke as the frontal kick. Temptation exists to take a few strokes into turn, relaxing kick and cutting down on kicking distance. Great opportunity to practice underwater kicking skills. *Score: 3.*

Technique: Body is in a more balanced position than during front kicking with a board. Also ... long, extended body position reinforces value of streamlining off the walls and during the stroke. No rotational benefits are found, unless long-axis rotation is added to the kicking exercise. *Score: 3. Overall Score: 6.*

POSITION NO.3 – SIDE KICKING

With swimmer on side, lower arm is extended in front as upper arm is placed down along swimmer's side. Head may remain in side position or may alternate from side to face-down position.

Conditioning: Kicking intensity may lessen due to swimmer's attention to breathing and maintaining form. Also during side kicking, swimmers will rotate from one side to the other, engaging the arm stroke upon rotation. *Score: 2.*

Technique: Side kicking is more stroke-specific than front or back kicking, particularly with rotational effects added. Also an excellent opportunity for practicing balancing and ideal head and body positions. *Score: 3.5. Overall Score: 5.5.*

POSITION NO.4 – VERTICAL KICKING

In deep water, the swimmer **stands** in one spot in the pool, just off the wall or lane rope. While flutter kicking in a stationery position, hands are held at the side or, preferably, placed across the chest, or held above the surface of the water.

Conditioning: Swimmer uses the kick to keep the head above the surface of the water.

Any lapse in kicking means no air to breathe! That's enough motivation for big points! *Score: 4.*

Technique: Although hydrodynamic effects of forward motion go out the window, the kick and body position of the swimmer can be easily viewed and corrected by an on-deck coach ... back straight, vision forward, small and fast flutter kicks! *Score: 2.5. Overall Score: 6.5.*

To ensure you are getting the most from your kicking, incorporate a variety of kicking positions into your routine.

What's COOKIN'?

By Bill Volckening
USMS Editor for SWIM Magazine

Twelve months ago, I had nearly eaten my way out of swimming. I was 70 pounds overweight and was having trouble finding a swimsuit large enough to fit my size 42 waist. When I learned the "Big & Tall" men's shop didn't sell Speedos, I knew it was time to make some changes. Unfortunately, with so many conflicting ideas circulating about diet and nutrition, I really was not sure where to start.

"Fad diets work (for a nanosecond)", says Kathleen Daelemans, bestselling author and host of the "Cooking Thin" show on the cable Food Network. *"I should know. I tried all of them. I lost tons of weight. And sadly, it all came back. There was the cabbage-soup diet, the steak diet, the pineapple diet, the seven-day diet, the shake diet and the diet-pill diet."*

Most people are confused about nutrition, but Daelemans cuts to the chase – masterfully combining sensible ideas and basic philosophy about healthy eating, which ultimately helped her lose 75 pounds.

I first discovered Daelemans and her popular "Cooking Thin" show in January 2001 and I was immediately struck by her humour, honesty and good advice. Twelve months later and 70 pounds lighter, my size 36 trousers are loose and people are asking me, *"How did you do it?"* At first, I joked about following a fried pork rind and Coors Light diet. Then I realised people could really benefit from what I have learned. It is deceptively simple.

Daelemans says, *"To lose weight and get fit, you have to do three things ... eat right, exercise and make up your mind to do it."*

5 STEPS TO HEALTHIER EATING

In her best selling book, "Cooking Thin", Daelemans presents a witty, big-picture philosophy for achieving a healthier lifestyle through nutrition and exercise. Here are five important ideas that helped me get started on the road to healthier eating.

Identify patterns... start with a typical day, write down everything you eat and drink and be honest with yourself. Identifying bad habits will help you avoid unhealthy situations. Possible pitfalls include junk food and out-of-control portion sizes – but for me, all-you-can-eat buffet restaurants topped the list.

Make gradual changes... do not try to make a million changes at once. It is too overwhelming. Daelemans characterises these gradual changes as **maintainable lifestyle changes** and lovingly refers to them as **baby steps**. Learn to read labels at the supermarket. Pay attention to how much is considered a **portion**. Make healthier food choices by increasing fruit and vegetable portions and decreasing foods high in saturated fats.

Stay positive – and be realistic... *"I am living proof that modest lifestyle changes can result in weight loss"*, says Daelemans. *"Don't get me wrong – you won't wake up looking like a Hollywood movie star on Day 2, but you will achieve results."*

Be conscious... Daelemans encourages people to be conscious and *"ditch mindless eating. It is really important to know what you are doing to your body. Cup-cake pyjamas are not a license to eat in bed."*

Reward yourself... everyone deserves an occasional reward but first we must earn them. Even then, rewards should be occasional and modest. For example, if you make a healthy change during the week, it is OK to have a scoop of ice cream ... **but not the whole carton!**

QUICK & EASY RECIPE

During the last year, I invented several of my own recipes. The following recipe is one of my early quick-and-easy recipes. If you crave a rich, creamy shake, but don't want the high-fat content and calories found in milkshakes and sherbet-based smoothies ... try this recipe. It is an ideal solution for a grab-and-go breakfast or mid-afternoon snack.

Strawberry Smoothie

Ingredients:
1 Banana
½ cup Whole Fresh Strawberries
1 cup Crushed Ice
½ cup Fat-Free Vanilla Soy Milk

Rinse Berries and remove any greens. Combine ingredients in a blender and blend until smooth. Serve in a tall, frosty glass.

Helpful Hints... let the strawberry flavour take centre stage in your smoothie. Try using slightly green unripened bananas. Unripened bananas will thicken the smoothie without adding too

much strong flavour. To adjust the consistency, try varying the amount of ice. For a change of pace, try other types of fruit. Fresh usually tastes better – but frozen fruit also works. Experiment with your favourite fruit combinations ... **and enjoy!**

1 serving (makes about 1 pint)
Calories = 175
Calories from fat = 12

SWIMMING Down Under

The competition was grand ... Masters Swimmers from around the world converged on Australia to compete in the World Masters Games in Melbourne and the IGLA Games in Sydney.

2002 WORLD MASTERS GAMES
Melbourne Memoirs

By Jane Hill

It is a long way to Melbourne, Australia – a flight of 14 hours from Los Angeles. Somewhat dishevelled and a bit worse for the wear, my husband, Don, and I arrived in Melbourne – site of the 2002 World Masters Games.

The Games were **big!** In fact, with over 25,000 competitors from 97 countries doing battle in 29 different sports, it was the largest multi-sport festival in history. By contract, the 2000 Olympics featured about 10,000 athletes.

As usual, swimming boasted the largest number of participants, although with a smaller number of Americans participating than in the past, the competition was far less intense than you might expect for such a grandiose event.

Masters Games athletes were ubiquitous – on the streets, crowding into restaurants, in the zoo and other landmarks, on the ferry in Sydney. We were everywhere! We were inescapable. Fortunately, the sports-crazy Aussies were unfailingly friendly, polite and helpful.

Australia is a land of adventure. Our own personal adventure began with a hair-raising ride from the airport to our hotel – driving on the "wrong" side of the freeway. Surviving that experience, we decided to tour around the city, blissfully unaware of the "city only" rules of the road.

One such rule involves the infamous "hook turn" – a turn found only Melbourne. Let's see if I can explain it. To turn right, for example, you need to be in the far left lane and block the traffic from the side until the light lets you through. That way you can avoid oncoming trams headed in your direction or cars honking way back in line behind you that want to go straight. Simple? No problem, mate! Anyway, we decided that public transportation was just fine and we returned the rental car the next morning.

We travelled to and from the pool via trams which were easy to catch outside our hotel, conveniently located next to a Hard Rock Café. The Melbourne Aquatic Centre is a beautiful, state-of-the-art structure and the first 50-metre pool I have seen that doesn't look too long. Though it is indoors, the bright lighting makes it a cheerful place.

We watched 1972 Aussie Olympic star, Shane Gould, win the 50 Butterfly by a mere 1/100th of a second. Hey, Masters is tough! Olympic medals mean nothing when you get up on the block for your next race. Still, I was relieved to learn that Shane is more than five years younger than I am, so she will never be in my age group.

We noticed that the events were running pretty quickly off the blocks but that did not prepare me for my first event – the 100-metre Freestyle. I was expecting the starter to say, "*Women's 100-metre Freestyle*", followed by; "*Take your mark*" – and then the beeper would go off. That was how they used to do it when I was competing – back in the Dark Ages.

Not any more. The whistle blew once to get us behind the blocks. Then the second whistle blew to get us on the blocks. Then the starter said, "*Rarr raarr rarrrrr*" (which, translated, is "*Take your mark*"). Then the beeper went off very quickly.

I was left standing on the block looking around as everyone else dove into the water. I said, "*Geeeeeez*", and I heard the crowd grown. Though my time was less than stellar, I managed to win the race. Afterward, complete strangers came up to me and said, "*Great race. What were you thinking?*" Don won his race, too, and he beat my time.

Americans dominated the 80-and-over age groups and Mike Sorensen (men 30-34) and Plamen Alexandrov (men 40-44) were outstanding. The Brazilians also did well, but Aussies won the majority of events.

On our down time, we went to the Olympic Park where the Track & Field events were held. The oldest man competing in the Games, 99-year-old Charlie Booth, was a runner. He had competed a few days before, so we decided to watch the women's 50-and-over Pole Vault competition. Hey, you only go around once.

The 25,000 competitors in Melbourne represented a "diversity", shall we say, of skill

levels. Don and I could not contain our laughter when the American (as it turned out, she was 75 years old) tried to vault over the three-foot-high bar and actually went backward after she planted her pole. Then the Canadian wiped out so badly that the pole and the bar got mixed in between her legs and the officials actually had to untangle her. We were quite happy to return to the pool where we felt a little more at home.

After the swimming competition, we travelled to Adelaide to see old friends, then went to Sydney and explored that fascinating city for a few days. We left with a warm feeling about Australia. I had been there 30 years earlier and I was happy to see that things had not changed very much. The people are still laid-back and friendly. And they still love their sports.

Complete swimming results are available on SwimInfo.com.

Jane Swagerty-Hill, an Olympic bronze medallist in 1968 in Mexico City, won five individual golds in Melbourne. Hubby, Don, won four.

ANAEMIA

By Jody Welborn, M.D.

Anaemia affects many active people – from recreational athletes to the elite competitor. But once diagnosed – and after a thorough medical evaluation – treatment is available.

Lisa, a 32-year-old swimmer, typically enjoys open water swimming and the long distance sets that her coach occasionally provides at morning workouts.

Over the past six months, since the birth of her third child and after starting on a vegetarian diet, she noticed an overwhelming fatigue, which she initially attributed to caring for three children as well as participating in early morning workouts.

So, she eliminated the morning workout and switched to the evening session. However, her symptoms did not improve. In fact, she began to notice a rapid heartbeat whenever she walked up the stairs. She also noticed shortness of breath when she tried to swim any distance over 200 metres. She felt worse than she had during the last two months of her pregnancy!

Lisa then made an appointment with her primary care physician, who took some blood tests. The tests showed that Lisa's haemoglobin level was less than 10mg/dl (normal is 12-14 for women). Blood work was also performed to determine the level of iron in her body and the results showed abnormally low levels. Other tests were normal and iron-deficiency was determined to be the cause of her anaemia.

Her physician explained that her anaemia could probably be attributed to several factors ... she was a pre-menopausal woman who had recently had a child and the blood loss from both resulted in low body iron stores. In addition, since switching to a vegetarian diet, the amount of dietary iron easily available to her body was decreased and the ability of the stomach to absorb the iron in her diet was impaired even more by her frequent use of cimetidine for heartburn.

Lisa started taking ferrous sulphate and, after careful consideration, added chicken, particularly dark meat, to her diet. Slowly, her symptoms improved and her endurance level returned to normal.

In the book, *"Four Champions, One Gold Medal"*, author Chuck Warner tells the story of Tim Shaw, one of America's greatest distance swimmers, whose quest for a gold medal in the 1976 Olympics was thwarted by severe anaemia, which was diagnosed shortly before the Olympic Trials. Shaw's anaemia was brought on by a diet deficient in iron. The amazing part of the story is that Shaw still made the Olympic team and won the silver medal in the 400 metre Freestyle – despite his illness.

A DEFICIENCY OF RED BLOOD CELLS

The word anaemia is derived from the Greek words meaning "without blood". In practice, anaemia consists of an abnormally low number of red blood cells in the bloodstream.

A normal number of red blood cells is important since the cells carry oxygen throughout the body to nourish the organs and the muscles. The red blood cells contain haemoglobin, a molecule containing protein and iron, which binds oxygen and controls the release of oxygen into the tissue. These red blood cells are produced in the bone marrow.

The number of cells is carefully regulated by the body – a sufficient number to maintain enough oxygen-carrying capacity, but not too many, which causes the blood to become thick. Interestingly, the kidney also has a role in the production of red blood cells as it releases a hormone called erythropoietin (EPO), which stimulates the bone marrow to increase production if more cells are needed.

Anaemia can be caused by problems with any of the aforementioned processes – however, the most important and most common anaemia in active adults is the result of iron-deficiency.

WHAT IS IRON-DEFICIENCY ANAEMIA?

Iron is an important component of haemoglobin, the protein that carries oxygen and it is stored in the body in very small amounts. When stores of iron are depleted the

body is unable to produce the haemoglobin it needs to make red blood cells. At this point, the numbers of red blood cells begin to decrease, iron-deficiency anaemia occurs – and symptoms develop.

HOW DOES IT OCCUR?

The major causes of iron deficiency anaemia include excessive blood loss, decreased absorption of iron and inadequate iron intake. In men and post-menopausal women, chronic bleeding from the gastrointestinal tract is the most common cause of blood loss. The cause of the bleeding may be relatively minor – such as that from haemorrhoids – or more serious, such as colon cancer.

Frequent use of non-steroidal anti-inflammatory medications can also contribute to chronic blood loss by causing gastritis, an irritation of the stomach lining. These medications can also contribute to the development of peptic ulcer disease. In pre-menopausal women, the most common reason for excessive blood loss is menstruation.

Another important cause of iron deficiency arises when the body has problems absorbing dietary iron. This condition can occur in people who have had surgical procedures which remove the part of the stomach that absorbs iron.

For most people, however, iron absorption is decreased by other foods or medications. For example, tea (which contains tannins) can interfere with iron absorption as can the calcium in dairy products. Medications that inhibit acid secretion such as medications used to treat stomach problems like gastroesophageal reflux disease or peptic ulcer disease also decrease iron absorption.

Iron-deficiency is the most common cause of anaemia but lack of iron in the diet is not necessarily the most common cause of iron deficiency. Most people need just 1 milligram of iron each day. Menstruating women need 2 milligrams of extra iron each day. A healthy diet easily provides these recommended daily amounts. Pregnant women require additional iron supplementation.

Interestingly, both men and women who participate in regular, vigorous exercise appear to have higher daily iron losses than sedentary people. This group often has a lower intake of dietary iron because of healthier eating habits, including less red met and more natural foods, which are not iron-supplemented. Thus, the need for iron may be as much as 30% higher in those who engage in vigorous exercise.

Other causes of iron loss unique to athletes, especially distance runners, include “march hemolysis”, a destruction of blood cells caused by exhaustive exercise which is worsened by running conditions such as the type of running shoe or the running surface. Blood loss from the gastrointestinal tract in endurance athletes may also occur due to ischemic colitis, an inflammation of the intestine due to shunting of blood away from the stomach and intestines to the exercising muscles.

WHAT ARE THE SYMPTOMS?

In the earliest stages, an athlete with anaemia may not notice symptoms, although here is evidence that low iron without anaemia will lower endurance.

The first symptom may be a decline in performance with endurance activities, since the lower number of blood cells cannot transport the needed amount of oxygen to the exercising muscles. The athlete may also mention a significant increase in heart rate at a lower level of exercise than usual.

If the anaemia has been present for some time, the person may feel weak and fatigued or complain of dizziness or a feeling of a rapid heartbeat. When the anaemia is more severe, shortness of breath or chest discomfort may occur.

HOW IS ANAEMIA DIAGNOSED?

Anaemia can be confirmed by a simple blood test that measures the level of haemoglobin in the body. If iron deficiency is suspected, the levels of iron in the blood can also be measured as well as the level of ferritin, a protein that binds iron. If these tests are abnormal, then iron deficiency is present.

Once the diagnosis is made, the reason for the deficiency should be identified and may require an evaluation for bleeding from a stomach or intestinal site.

WHAT IS THE TREATMENT?

Once iron-deficiency anaemia is diagnosed – and serious causes are eliminated – iron supplements, usually ferrous sulphate, will be prescribed. It is important to ensure that the athlete is eating a well-balanced diet, including more red meat or dark poultry meat. Tea should be avoided as it decreases the absorption of iron from grains. Vitamin C increases absorption of iron and should be supplemented through diet or tablet form. Patients who are severely anaemic may require blood transfusions.

Although iron replacement will treat iron-deficiency anaemia, it will not fix other types of anaemia. An athlete’s poor response to supplemental iron requires further evaluation. It is important to remember that too much iron in the body can cause serious medical problems – such as heart and liver disease. Iron supplementation, particularly in men and post-

menopausal women, should be avoided unless iron-deficiency is diagnosed.

Anaemia affects many active people ... from recreational athletes to the elite competitor. Many of these athletes are diagnosed with iron-deficiency. The athlete with iron-deficiency will not perform as well and may simply require iron supplementation to improve performance.

Since the causes of iron deficiency are numerous, the person experiencing symptoms of anaemia, or diagnosed with iron-deficiency anaemia, should have a thorough medical evaluation to search for the cause of the anaemia before treatment is started.

Jody Welborn is a cardiologist from Portland, Oregon. In addition to being a member of the USMS Sports Medicine Committee, Fitness Committee and Planning Committee, Jody is also the Safety Chair for the Oregon LMSC. Many thanks to Art Figur for his contribution to this article.

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DRAG IS NOT ENOUGH

By John Waring

There has been considerable debate recently over the use of lift and drag forces in swimming propulsion. In particular, this debate has centred on the Freestyle arm stroke.

A number of researchers are currently advocating a pure drag propulsion (that is, the swimmer is advised to pull straight back in order to maximise drag forces and eliminate any lift contribution to propulsion).

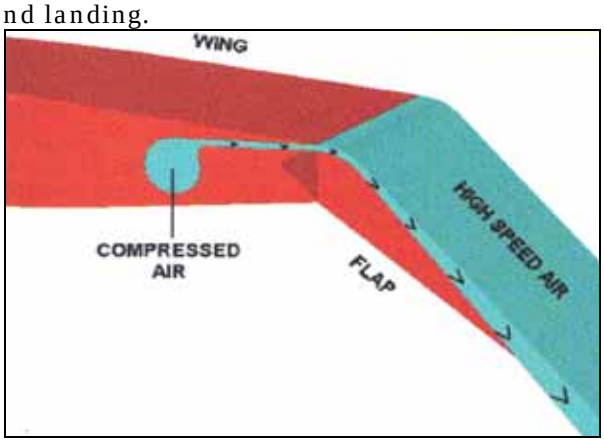
Such a stroke would be considerably less efficient than a stroke that optimised all available forces.

Recently, Dr. Brent S. Rushall introduced the "Coanda effect" as an indispensable prerequisite for generating lift with the hand ("Lift is Not a Viable Force in Swimming Propulsion," *ASCA Newsletter, Vo!. 2002, Issue 5*). He argues that the shape of the hand is not conducive to producing this effect. Thus, he concludes, the hand is incapable of generating substantial lift forces.

However, I believe the Coanda effect is not a prerequisite for lift and is not applicable to swimming propulsion.

First, it would be helpful to explain what this mysterious Coanda effect is and where it is used. Simply put, when high speed fluid is injected along a surface, it will tend to follow any curve that surface might take. The effect can be demonstrated if you place a spoon under running water. The water flows along the surface of the spoon and changes direction as a result. This, in turn, results in a lift force that draws the spoon into the water flow.

Airliners use the effect to keep air flowing smoothly over the flaps when they are extended. This allows a lower, safer speed when taking off and landing.

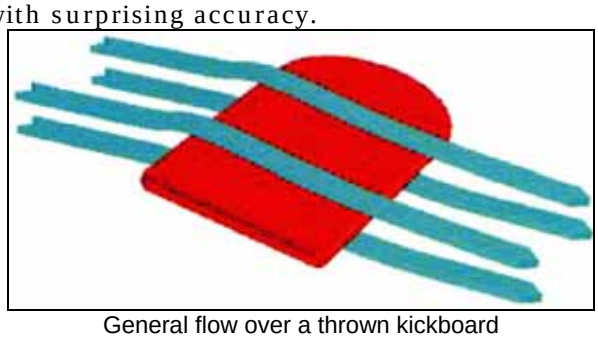


Blown Flap using Coanda effect

However, the airliner does not use the Coanda effect when the flaps are retracted, which is the majority of the flight. Many aircraft, particularly smaller ones, have no such system, yet they are perfectly airworthy. Consequently, the Coanda effect is clearly not an indispensable requirement for lift.

The human hand, while not an ideal lifting surface, is perfectly adequate for swimming propulsion. In reality, just about any generally flat object will generate lift.

A Frisbee does not have a super-critical, high-efficiency airfoil cross section, but it flies, nonetheless. Facetiously, I recall a coach who, less than enthused at my 400 repeat times, flew a standard kickboard a considerable distance with surprising accuracy.



General flow over a thrown kickboard

Obviously, a hand is generally flat during swimming. Consequently, it can-and should-be used as a lifting surface. This last statement begs the question, "Why is lift any better than drag?" Theoretically, they could both produce the required thrust to move a Freestyler at over 2.0 metres per second, which translates to a sub-50 second 100 metres. The difference is efficiency.

SWIMMERS' ENERGY

All swimmers have a limited amount of

energy that they can expend in a given amount of time. This is something understood by every swimmer and coach. Indeed, one of the primary aims of training is to increase the energy a swimmer can expend in a given amount of time.

Consequently, the fraction of this energy that gets converted into actual thrust is critical. This is another focus of training-improving stroke mechanics. In essence, a better stroke transmits more of the swimmer's energy as useful work.

In recent years, some researchers have dismissed lift as a preferred means of propulsion. Analysing lift in a stroke is difficult. The continuously changing hand and arm position, velocity and orientation relative to the water must be known. The unsteady nature of the flow around the hands and arms further complicates the issue. Consequently, different, yet equally well-intentioned researchers can reach vastly disparate conclusions about the fluid mechanics of the same stroke. However, the most efficient possible pure drag stroke is relatively simple to analyse.

This imaginary stroke would have the swimmer's hand follow a straight line path backward. This path would have no curvature either when viewed from below or from the side. In order to achieve competitive forward speed, the swimmer would have to turn over at very high velocity-that is to say, the swimmer would not appear to be climbing a rope, the sort of analogy generally associated with champion swimmers. Instead, the swimmer would appear to be "flailing" or "spinning his wheels" – terms associated with novices.

In quantitative terms, a 6-foot swimmer would have to turn over at above 2.7 strokes per second to pull 50 metres in 30 seconds. At that rate, the swimmer would require around 76 strokes to complete the length, assuming he or she achieved 5 metres from the push-off before taking the first stroke.

These are not the sort of numbers generally seen in world, class swimmers. In addition, since this is an idealised example, the best one could hope for in reality would be worse than this. Such a stroke, as one might imagine, has a very high energy cost associated with it. In engineering terms, power equals force times velocity. Approximately the same thrust force is required to go a given velocity, using either a lift- or drag-dominated stroke. However, the much higher rearward hand velocity of a drag-dominated stroke requires significantly more power.

One explanation for this is that champion swimmers maximise lift in their stroke. Any real stroke has the hand following a curved path through the water. Even if a swimmer were to use a straight-line drag pull, his or her hand would have to follow a transverse (up-down or side-to-side) path at the beginning and end of the stroke. This is necessitated by the fact that the hand cannot pass through the body.

Frequently, the path of the hand during a Freestyle arm pull is shown from the swimmer's standpoint. This is the view from a camera which moves with the swimmer. In this view, the hand appears to follow a very elongated curve. Unfortunately, this view is useless and highly misleading for evaluating propulsive fluid mechanics.

The camera must be fixed to the side of the pool and not allowed to rotate. In this way, one can see the true path of the hand through the water. This view clearly indicates how little of the hand motion is directly backward. The hand does so only momentarily at the bottom of the stroke. This brief "dead spot" is where the hand changes its direction of motion from predominantly down to up. In this zone, where drag and transition effects dominate, propulsion is least efficient.

If the stroke were, indeed, drag-dominated, one would expect to see a much longer transition zone. This would result from the high rearward slippage velocity fundamentally required by drag propulsion.

The energy cost of using pure drag propulsion is prohibitive. This wasteful energy expenditure would manifest itself as an excessively high turnover. The optimal stroke would increase the total thrust by incorporating lift. In short, avoiding any lift propulsion will cause the swimmer to spin his wheels, use more energy and go slower.

John Waring is the head swim coach at Carleton University, where he is enrolled as a Ph.D. student in aerospace engineering. He also continues to practice as a professional engineer.

CALCULATION OF STROKE FREQUENCY & DISTANCE PER STROKE FOR THE BEST POSSIBLE PURE DRAG PROPULSION

The following are approximate parameters for a typical 6-foot male swimmer…

A_{hand} = 0.019 m^2, the plan form area of the hand in meters squared

$A_{swimmer}$ = 0.08 m^2, the maximum cross-sectional area of the swimmer

C_{Dhand} = 1.17, the coefficient of drag for the hand when it is used as a pure drag paddle with zero lift

$C_{Dswimmer}$ = 0.6, the coefficient of drag of a submerged swimmer in the streamlined position

The true number for a swimmer on the surface will likely be higher due to wave drag. The number itself is typical but on the low side of numbers determined by several researchers.

L_{stroke} = 1.45 m, the maximum stroke length relative to the swimmer

$V_{swimmer}$ = 1.67m/sec, the swimmer's speed in metres per second (equivalent to 1:00, 100 meter pace)

Also,

rho_{water} = 995 kg/m^3, the density of water in kilograms per cubic metre

First, we need to calculate the drag force on the swimmer as a whole. This will be equal and opposite to the thrust force being developed by the swimmer. The drag force is given approximately by...

$D_{swimmer} = C_{Dswimmer}\ 0.5\ A_{swimmer}\ rho_{water}\ V_{swimmer}^2$

$= (0.6)(0.5)(0.08)(995)(1.67)^2$

= 66.6N (force in Newtons equivalent to 15.0 pounds)

Again, the true value is likely higher than this due to wave drag. Since the swimmer is using drag forces alone on the hand, the hand must be moved backward fast enough to generate 15 pounds of force. The equation governing the thrust force is...

$F_{hand} = C_{Dswimmer}\ 0.5\ A_{hand}\ rho_{water}\ V_{hand}^2$

However, in this case the force is known and the hand velocity backward is the unknown quantity. Rearranging the above equation, we have...

$V_{hand} = (F_{hand} / (C_{Dhand} * 0.5 * A_{hand} * rho_{water}))\ 1/2$

$V_{hand} = (66.6/ ((1.17)(0.5)(0.019)(995)))1/2$

V_{hand} = 2.45 m/sec

This is the speed of the hand backward relative to the water. Since the swimmer is moving forward at 1.67m/sec, this must be added to the above velocity to compensate. Consequently, the hand speed relative to the swimmer is...

V_{hand} = 2.45m/sec + 1.67m/sec = 4.12m/sec

The stroke frequency can now be determined from this velocity and the maximum stroke length relative to the swimmer. This is...

$f_{stroke} = V_{hand}/L_{stroke}$

f_{stroke} = 4.12/1.45

f_{stroke} = 2.84 strokes/sec

The distance per stroke is...

$DPS = V_{swimmer}/f_{stroke}$

DPS = 1.67/2.84

DPS = 0.588m

If the swimmer in our example swims 50 metres minus a 5-metre pushoff, the number of strokes required for the length is ...

$N_{strokes}$ = Distance/Distance-per-stroke

$N_{strokes}$ = (50-5)/0.588

$N_{strokes}$ = 76.5 strokes/length

This is a simplified analysis with a number of approximations and underlying assumptions. Some of the major ones are as follows.

The analysis assumed that the drag on the swimmer on the surface was the same as that while submerged in the streamlined position. The drag on the surface is likely higher due to wave drag. Also, the body position is less efficient since the arms are being used for propulsion and cannot be held over the head to reduce drag.

These effects are lessened somewhat due to reduced form and skin friction drag. This results from parts of the body being above water. However, the high speeds achieved underwater by elite swimmers using only their legs suggests that the drag forces on the surface are, on the whole, higher. Consequently, the drag approximation used in this example would have resulted in an underestimation of the strokes per length.

The swimmer in this example was pulling. Obviously, kicking would generate thrust and reduce the number of strokes required per length. However, this would be true for any kind of arm stroke.

The analysis did not take into account any thrust contribution from the forearm. The forearm does have a large surface area in comparison with the hand. However, its drag coefficient is considerably lower than that of the hand due to its generally rounded cross section.

Also, its velocity backward relative to the water would, on average, be lower than the hand. This would further reduce its useful contribution to thrust. The upper arm, which contributes only drag against the swimmer, would offset any thrust contribution from the forearm.

The various values of drag coefficients, cross sectional areas, etc., were typical. Nonetheless, these values would be different for every swimmer, which would vary the results either way, depending on the body type of the swimmer.

THE LAST LAP

MAKING A LIST ... CHECKING IT TWICE

By Scott Rabalais

Every coach teaches technique. But does every coach have a system for the implementation of technical skills into a training routine? There is a difference.

Experienced coaches understand that elite swimmers are highly conditioned and possess a high level of technical proficiency. Many

coaches chart the amount of training applied to various energy systems and aim for specific percentages to be allocated to each system. But how many coaches use a similar charting system for the teaching of critical technical skills?

When one considers the numbers of technical skills and the time it takes to practice each of them repetitively, the task seems staggering. Starting with general categories, the number of skills quickly reaches into the dozens…

- Starts: Freestyle; Backstroke; Breaststroke; Butterfly; Relays
- Turns: Freestyle; Backstroke; Breaststroke; Butterfly; IM Transition Turns
- Finishes: Freestyle; Backstroke; Breaststroke; Butterfly
- Strokes: Freestyle; Backstroke; Breaststroke; Butterfly

Within each of the four strokes, several areas may be addressed, including balance/body position, rotation, pulling, kicking, breathing, rhythm and timing. General skills, such as streamlining, underwater work and kinaesthetics, may be added to the skills list.

Already, the list is approaching 50 technique categories. There are more.

Consider a single skill such as the Backstroke pull or arm stroke, which can be sub-categorised into at least a half dozen skills – recovery, entry, catch, scull, finish, exit. Or, breakdown the Butterfly turn – approach, touch, release, body rotation, streamline, pushoff, underwater work.

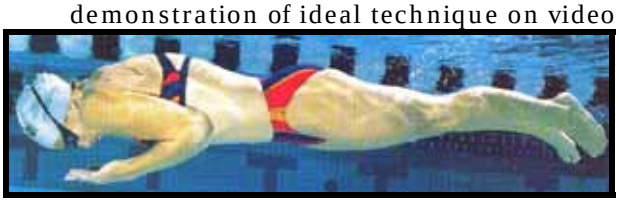
The fact of the matter is that a list of technical skills can easily venture well into the hundreds of items. One coach's list is likely to be different from any others due to factors of background, experience and perspective. However, for the sake of calculations, let us estimate that there are 200 technical skills that can be reviewed. How is a coach going to implement so many skills into a training regimen?

If a team trains six workouts per week and a coach chooses to highlight four skills per practice, the result is about 24 skills per week covered – or, about 100 per month. So, over two months, a coach should be able to review all of the skills on the list. Throughout the course of a year, each skill can be covered roughly six times.

Perhaps the greatest asset to such a system is the personal knowledge that no stone has been left unturned throughout the course of a year.

How might the focus on four technical skills be included in a practice without sacrificing the time devoted to conditioning? Here are a few applications that are commonly used by today's swim coaches…

- Include low-intensity skill development in warm-up, such as proper head position or kinaesthetic drills
- Offer stroke drill sets that are designed to enhance the swimmers' awareness of one specific aspect of the stroke
- During conditioning sets, continually remind swimmers to focus on a particular aspect of technique, such as finishing the kick in Breaststroke
- Teach the finer points of turning skills during 25-yard sprint sets from the middle of the pool
- Use a recovery break to view a brief demonstration of ideal technique on video



There are literally hundreds of critical technical skills that a coach can teach his swimmers. Here, Olympian Anita Nall practices her Breaststroke recovery and outsweep

Each coach will wish to modify his or her system to fit the specific situation and the proficiency level of the group and its individual swimmers. To begin implementing a **skills system**, take the time to develop a complete list of technical skills, using the aforementioned list as a starting point.

With a calendar, assign the various skills over several weeks until all skills are covered. Of course, multiple skills may be taught simultaneously, such as working on all three IM Transition Turns in sequence.

Be careful not to overload the mind of the swimmer … consider offering one skill or idea at a time.

If nothing else, you will be far more prepared and professional in your approach. Consider a swimmer who reports to practice after the first of the year and states, *"Sorry to have missed that New Year's Eve workout, coach. I heard we worked on Backstroke start reaction time".*

"No problem", you reply. *"We will cover it again on March 17!"*

Scott Rabalais is a collegiate and Masters Swim Coach in Savannah, Ga.

Reproduced from Swimming World and Junior Swimmer, February 2003

The OFFICIAL Word

AM I A GOOD OFFICIAL? CAN I BE BETTER?

By Carolynn Burt, Utah Swimming

In 20 years of conducting Local Officials Clinics, I have observed that there are several characteristics that are essential in becoming a proficient swimming official. Those who choose to become officials for the right reasons usually stay active long after their children have retired from swimming.

The most important characteristic of a good official is a selfless desire to help all swimmers achieve their best. He or she realises that every position is equally important in running a smooth competition – officials with high-profile positions have the same value to a successful meet as the backroom organisers. An ego-driven official never understands this concept and, ofttimes, will drop out of officiating early.

Secondly, a good official understands that swimming is a sport with clearly defined rules and regulations. These rules are not meant to be re-interpreted to **fix** a situation for one swimmer.

How many times have we – as officials – been admonished that if we are overly fair to one swimmer, we are being unfair to the rest of the swimmers in that particular event as well as unfair to other teams? The good official, therefore, has a strong will to judge fairly. He should never be swayed by emotion, team affiliation or outside influences.

Thirdly, an official with a pleasant, friendly demeanour always promotes a relaxed atmosphere that is essential to a well-run meet. Remember ... high tension electrocutes!

Many officials have been to national clinics and have heard renowned officials explain the things they do and share the experiences they have encountered.

I would urge all officials to attend national-level meets and watch the best of the best do their work. Observing what they do instinctively can be much more valuable than what a teacher can communicate in words.

Watch how focused these officials are during a race. They never sit while a swimmer is within their jurisdiction.

Watch the chief judge inform a swimmer of an infraction. Usually, he will do so in a most unobtrusive manner after the swimmer has gone behind the timers.

Watch how, when and where a referee talks to a protesting coach.

Watch how the meet is run – with each official doing his or her assignment and leaving the other tasks to those who are assigned to do them.

Pushing a button at the end of each race at a national-level meet may be the most important assignment an official will ever have as far as being given an opportunity to further his or her education toward becoming the best swimming official possible.

Reproduced from Swimming World and Junior Swimmer, March 2003

asca

LET'S HAVE REAL DEMOCRACY

By John Leonard

It is abundantly clear from the results of the round-table evaluations of the findings of the Governance Task Force and the consultants hired by USA Swimming that only two items are of **negative concern** by the existing delegates to the USAS convention. Those are ... the make-up of the USAS Board of Directors and the make-up of the House of Delegates. Predictably, those chosen and selected by the **present method** support the present method. Duh.

It is equally clear that the most important **piece** of the organisation that is USA Swimming is the club.

The club builds the sport. It's the entity that recruits new athletes or our sport.

The club promotes the sport, by conducting training, swim meets and running the education for athletes and parents that makes our sport popular and growing.

The club achieves. The coach at the club is responsible for the development of the athlete to all the achievement levels possible in our sport.

The club does everything – except govern the sport.

The sport is governed by a leftover from the old AAU, called the Local Swimming Committee. The LSC does not recruit athletes, does not promote the sport and does not **achieve**. In other words, it is completely and totally outside the mission of USA Swimming.

To the credit of those at the Dallas round-table (the delegates from those same LSCs), they recognise that and want to change all the action items of the LSCs that the governance study recommended. That support was overwhelming and gratifying.

But we need the clubs involved. And there is a simple and direct way to do it, proven over 226 years. It is called democracy. It gives the little guy and the big guy one vote.

We should assign **one vote per member**.

Every member of USA Swimming represents one vote.

If we have 280,000 members of USA Swimming, there would be 280,000 votes in the House of Delegates.

Each club has the opportunity to send a representative or representatives to the national convention. Each club carries the number of votes equal to its club registration numbers from September 1 of that year. Some clubs will carry 1,000 votes, some will carry 50 or 10.

Each club can send one rep with all 1,000 of its votes, or they can send 20 reps with 50 votes each. That's the choice of each registered club.

But each member of USA Swimming is directly representative of a vote. Every small club can come and express itself and vote.

Let's do one more thing ... let's recognise the importance of our top end high achievers ... after all, they help build the dreams of our sport. (How many young girls wanted to be Janet Evans or young boys be Josh Davis?)

For every senior national qualifier on your team, you get 5 more votes. For every national team member, you get 10 more votes.

What would happen?

Every club would have direct voice in the decisions of USA Swimming. Some clubs would choose to exercise that vote, some would not- just like every other American democratic institution. But every club would have direct voice. Real democracy.

Every athlete, every volunteer, every coach ... represented directly by those they know best ... their own club.

The national convention would grow. There would be more involvement and more excitement about our sport.

Each club intending to attend the national convention would name its delegate and alternates 60 days following the close of the prior convention, so we'd gain the opportunity (as recommended by the Governance Commission) to have the most educated delegates at the convention.

So, I agree: the recommendations of the Governance Task Force are not strong enough, not democratic enough. Let's do it right. Let's get this on the floor for the 2003 Convention as an alternate to governance proposal, and let's get it passed. I recommend we start with an explanation of this plan to every club in the USA with a direct mail campaign through USA Swimming and have them ask their LSC delegates to support it.

What do you think?

Let me know! **jleonard@swimmingcoach.org**

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HEALTH *Waves*

Tips for improving your Lifestyle
By Jim Miller, M.D.

OSTEOPOROSIS – A PREVENTABLE DISEASE

Susan is a 65-year-old Masters swimmer who trains four days per week and has no other athletic outlets. She competes regionally and occasionally attends nationals. She has USMS Top Ten times in IM, Butterfly and Freestyle.

She comes to her coach, noting that she cannot execute a Breaststroke underwater stroke since she is unable to stay submerged on starts or turns. Six months later, she begins to have back pain and cannot execute flip turns.

When the pain continues, her coach recommends that she see her doctor. During the visit with her physician, she learns that she has lost two inches in height, which, combined with her physical exam, leads to an X-ray. The X-ray reveals a compression fracture in her lower back.

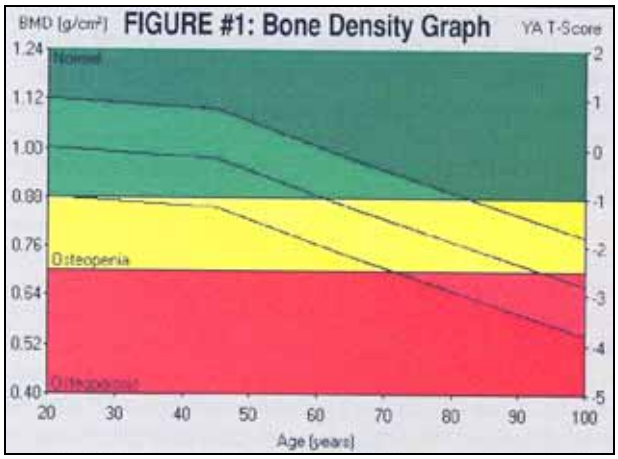
Her practitioner orders a bone density study, which reveals low bone density consistent with osteoporosis. He orders blood studies to define other underlying risks.

A GROWING PROBLEM

With the increasing longevity of our population, osteoporosis has become a growing problem. Osteoporosis is a condition characterised by the progressive loss of calcium in the bones, resulting in decreased bone density. This loss of calcium causes the bone to become fragile and increases the person's vulnerability to fractures caused by minor injuries, or even basic functions, such as standing.

Calcium is deposited in the bones until a person (male or female) reaches age 30 or thereabouts, though Caucasian and Asian women tend to store less calcium than do black or Hispanic people. Men – regardless of "race" – store more calcium in their bones than women – a result of hormonal and genetic factors. After age 30, everyone loses calcium from their bones at a relatively slow and steady rate. Women experience an acceleration of bone loss associated with menopause and driven by hormonal factors.

The bone density graph (Figure #1) reveals the normal curve of calcium loss in women. As you can see, bone density declines with age, although the data are based on average American women – that is, people who are overweight and sedentary.



Physicians distinguish between osteopenia – or "moderate" bone loss – and osteoporosis. The definitions involve "standard deviations", which are statistical units of variation. Osteopenia is defined as a bone density between one and two standard deviations from the norm – that is, a woman's bone density is less than that of 83-97.5% of her peers. Osteoporosis is a term that is reserved for those who have bone loss greater than the standard deviation of minus-2 – their bone loss is greater than 97.5% of their peers.

The risk of osteoporosis rises with age and decreasing levels of fitness. Diet also has a dramatic impact on poor calcium content in bones. The consumption of dairy products – excellent sources of calcium – has declined in the U.S. in recent years. Foods high in phosphate bind calcium, preventing it from being incorporated into the bony matrix. High phosphate foods include fast foods, diets high in meat and sodas (whether diet or regular, caffeinated or decaffeinated). These two dietary factors have combined to create a population of young adults who have less calcium in their bones than they should.

The result of all these natural, dietary and lifestyle factors is an alarming rise in the incidence of calcium-deficient bones at younger ages and higher percentages than we have seen before. Once a person's bone density falls to the minus-2 standard deviation from the norm, the bone is defined as being osteoporotic and is at risk of breaking. The risk increases dramatically in those with eating disorders. Table #1 summarises the risk factors for osteoporosis.

TABLE #1: Risk Factors for the Development of Osteoporosis

- Age
- Ethnic background – family origin from the British Isles, northern Europe, China or Japan
- Diet – low calcium intake and high phosphate intake
- Eating disorders
- Family history
- No-impact exercise
- Sedentary lifestyle
- Thin or small build
- Medications such as the steroid cortisone, uncontrolled doses of thyroid medication, some diuretics
- Caffeine (greater than 5 cups per day)
- Smoking
- Menopause
- Colitis
- Hyperparathyroidism
- Hyperthyroidism
- Cushing's syndrome (disease of the adrenal gland)
- Chronic kidney disease
- Diseases of the small and large intestinal tract that result in problems with absorption
- Excessive alcohol consumption

SWIMMERS AT HIGHER RISK

The story usually stops here – but not with swimmers. Swimming is unique because it is a sport pursued for many hours in a weightless state. While muscle contraction does aid in calcium deposition, it is probably not as strong a stimulus to new bone formation as is gravity-based impact activity.

While there is some controversy on the subject, most researchers believe that calcium deposition is not as organised along the lines of stress if impact is not involved in its formation. Thus, swimmers are at a higher risk than their friends who engage in impact-based exercises.

Examples of impact-based activities include walking, running and jumping. This list includes most of the ball sports, aerobics classes, etc. Weight-bearing activities, though non-impact, include cross country skiing, the elliptical machine and the Stair-Master. Strength training, a non-impact activity, also has been shown to help. Recent research has shown that the heavier the weights used, the more improvement there is in calcium deposition. The light hand weights that are used for toning do not have the same impact on bone building.

Treatment involves medication that is currently controversial. Hormone Replacement Therapy (HRT) has been the cornerstone of therapy for over a decade. The controversy surrounding HRT goes beyond the scope of this article, but when it is combined with supplemental calcium; its effectiveness is not to be questions. However, if HRT is stopped without other medication taking its place, the loss of calcium from the bone is rapid.

Bisphosphonates (currently, Etidronate, Alendronate-Fosamax and Risedronate-Actonel) slow down the activity of the bone breakdown-remodelling cells, known as osteoclasts. Calcitonin (Miacalcin), derived from salmon, is another medication that helps to re-achieve this balance. It is delivered as a nasal spray.

"Designer estrogens" – a term used for compounds that have only some of the

properties of natural estrogens – are less effective, but lower the risk of potential side effects. Some of the side effects avoided include breast soreness, uterine bleeding and cancer. Reloxifene-Evista is the most commonly used drug in this category.

While these medications avoid some problems, they are unnatural and, thus, have their own side effects, such as blood clots. PTH (a synthetic version of natural parathyroid hormone) is a new compound that promises to stimulate the formation of new bone growth. It has recently been released in a daily injectable form.

ADD IMPACT-RELATED ACTIVITY

In addition to drug therapy, swimmers should add some form of impact-related activity or at least weight-bearing activity to their routine. While this recommendation may be speculative, studies involving non-gravity states as well as sedentary individuals clearly point out the importance of impact and weight-bearing activity. This routine should be supported by a daily intake of calcium supplements. Your medical practitioner will suggest doses and forms that are appropriate for you.

Men are susceptible to developing brittle bones – a fact that is often overlooked, even by physicians. The same risk factors that have been outlined (medication, inactivity, smoking, colon disease, etc.) apply to men. A recent study compared men over 50 with increased risk factors that resulted in a hip fracture to their female counterparts. This study found that less than 5% of the men received bone-protective drugs, compared with 27% of the women. Both figures are too low.

Risks must be individualised. Considerations should include family history, ethnic background, hormonal history, medication background (some drugs are known for depleting calcium in bones), age, fracture history, changes in height, smoking, renal disease and colitis … among others. Testing is easy and involves a painless measurement of the calcium content of the bones of the spine and hips. DEXA (dual energy X-ray absorptiometry) scanning is the current gold standard for such measures – however, other radiologic and ultrasound devices are also used for screening.

EARLY INTERVENTION IS KEY

Susan, our original case study, had many risk factors and warning signs besides her age. She was a postmenopausal woman who had lost two inches in height, increased her buoyancy and experienced nagging back pain. Though she is a national-level athlete, she does not engage in any impact activities. The risk factors were clearly present. The symptoms were also present.

Considering this scenario, the take-home lesson is that early intervention is the key for a successful outcome in both men and women. Swimmers who do not cross train with a weight-bearing sport may increase their risk of osteoporosis. Other risk factors must be taken into account and silent symptoms should not be ignored. Detection of osteoporosis is easily accomplished and treatment can be very effective if this debilitating disease is detected early.

Dr Jim Miller is the President of United States Masters Swimming. He is board-certified in family practice and sports medicine and owns a private medical practice in Richmond, Va. He swims and coaches for Virginia Masters Swim Team and travels with USA Swimming, both nationally and internationally, as a team physician.

WHAT'S *Cookin'?*

By Bill Volckening

STRATEGIES FOR NAVIGATING THE SUPERMARKET

What does supermarket shopping have in common with open water swimming? Both require strategy and navigational tactics. We have all been there before – mindlessly strolling through the supermarket after swim practice, picking up anything that looks good. It's just like being blown off course in an open water swim on a hazy day.

I used to float through the market, brain-dead, chlorine-soaked and starving. It led me to a pantry-full of unhealthy options … nutritious-looking snack foods with tons of hidden fat … "healthy" prepared meals with astronomically high sodium … "natural" beverages filled with sugar and extra calories.

As you may have read in the previous *"What's Cookin'"* column (on page 40 of this article), I changed my routine and shed 70 pounds during the last year with great inspiration from Chef Kathleen Daelemans, her bestselling book and her popular TV show, *"Cooking Thin"*.

At this time a year ago, I had already lost 20 of those unwanted pounds. And one of the most helpful early lessons was a simple strategy for successfully navigating the supermarket.

Having learned other ideas along the way, I now offer five basic guidelines that worked for me. These tips are not only for people who wish to lose weight. They are for anyone who

consistently wants to make healthier food choices.

MARKET LINE: STAYING ON COURSE

Eat first

Avoid going to the supermarket when you are hungry because you may make more unhealthy choices. Try having a small snack before going shopping for food.

Plan ahead

Plan your meals ahead of time and make a grocery list. Try stocking-up on pantry ingredients for healthy, quick-to-prepare meals that can be put together from pantry items – especially when there is no time to go grocery shopping.

Outer limits

Stay in the perimeter aisles of the supermarket. That is usually the place to find fresh food items, including produce, meats and dairy products. Pick up a new produce item every time you go to the market and learn how to prepare it. Trust me, those strange-looking fruits and veggies are usually delicious and nutritious.

Inner strength

Avoid the inside aisles where all the prepared foods and junk food are found. Many of these foods can contain surprising amounts of hidden fat and calories.

Get educated!

Whenever purchasing prepared foods, read the labels and understand what you are reading. Check out the suggested portion sizes and compare the recommended portions to your own portions.

QUICK & EASY MEAL

If you are running late after swimming practice and think you don't have time for a healthy dinner … think again. Keep the ingredients for this quick and easy pesto on hand and whip it up in a flash when you are short on time.

For a balanced meal, add a quickly seared piece of protein, such as chicken or fish, and a simple tossed salad. You may use the roasted red peppers that come in a jar – but if you have the time, try roasting your own. Make a double batch of pesto and keep some in your freezer for those times when you need to make dinner in a rush.

Roasted Red Pepper Pesto

Ingredients:

1 jar (7.25 oz.) Roasted Red Peppers
1 clove Garlic, coarsely chopped
1 tablespoon grated Parmesan Cheese
1 tablespoon Extra Virgin Olive Oil
Kosher Salt to taste
Freshly ground Black Pepper to taste
2 tablespoons Flat Leaf Parsley
2 tablespoons Pine Nuts

In a food processor, pulse all ingredients together until blended into a paste. Toss the pesto with your favourite cooked pasta for a quick dinner, or mix it into vinaigrette to top a fresh, tossed salad.

Serving Size: 2 tablespoons

Nutrition: Approximately 25cal/2g fat per serving

Reproduced from ASCA Newsletter
Volume 2003 Issue 1

A FEW SUGGESTIONS ON HOW TO BE A BETTER SWIMMING PARENT

By Coach Michael Brooks NBAC, ASCA Fellow

TEACHING VALUES

You are the key to your child's swimming

A parent's attitude toward swimming, the program, the coach, and his child's participation, is key towards the child's attitude and success. The young swimmer takes cues from his parent. If the parent shows by word, deed, facial expression, etc., that he does not value swimming, that he doesn't appreciate having to drive to practice or sit in the stands during meets, that *"it's not going to matter"* if the child skips practice, that morning practices are just **optional** and that the child would be better off with extra sleep, then the chances are very good that the child will lack commitment, have little success, then lose interest in swimming. Support your child's interest in swimming by being positively interested.

Allow your swimmer to be resilient

Failure, and facing that failure, doesn't cause kids to melt. Failure isn't such an evil thing that parents should try to shield their kids from it. Allow them to fail, then teach them to get up off the canvas and try harder to succeed the next time. If parents are continually sheltering their swimmers from the storm, cushioning every fall, making excuses for them, finding someone else to blame, the children never learn anything. Even worse, they never learn that they are responsible both for their failures and for their successes. Allow them to stand on their own, and you will be helping them immeasurably down the road.

Teach them to dream big – a world of infinite possibilities

If you try to temper your child's dreams, if you teach her to settle for the ordinary, you may indeed save her from many a heartache and many a failure. But you also rob her of the opportunity of achieving great things, and the opportunity to plumb her depths and realize her potential. Winning big means failing many times along the way. Each failure hurts, but these temporary setbacks create the strength for the final push. Instead of having children avoid failure by never taking risks, teach them how to think correctly about failing: risk-taking and failure are necessary for improvement, development, motivation, feedback, and long-term success.

What success is

Only one swimmer can win the race. Often in the younger age groups, the winner will be the one who has bloomed early, not necessarily the swimmer with the most talent or the most potential to succeed in senior swimming. It is expected that every parent wants his child to succeed, wants his child to have a good and learning and valuable experience with swimming. Every child can succeed – only make sure you define success correctly: being the best you can be, striving for improvement in every aspect of swimming. That leads to lasting success ... and lasting enjoyment.

Fun, fun, fun

If **fun** means mindless entertainment and sensory bombardment, then wasting hours playing Nintendo is loads of fun, and swimming is, by definition, **not fun**. If **fun** means working hard and challenging yourself, taking pride in accomplishing difficult goals, and discovering talents you didn't know you had, then swimming is fun and Nintendo, by definition, is **not fun**. The meaning of fun is very much an open question for children and one where parents and coaches have much influence over their charges. Are we building a nation of energized achievers or lifeless couch potatoes?

Work, work, work

Persistence and work ethic are the most important qualities leading to success in swimming and everything else. And if a work ethic is not created and cultivated when a swimmer is young, it very likely will never appear. It is so rare as not to be an option that a kid who is a slacker from ages seven to fourteen will suddenly change his spots and become a hard worker. Love for and pride in hard work **must** be inculcated early on, and again parents and coaches have much influence in creating this attitude.

Burnout is over-rated

So many times parents and kids will say, *"I don't want to commit to swimming because I don't want to get burned out."* But for every one case of **burnout** caused by a swimmer spending too much time in the water and working too hard, we will see a hundred cases of **pre-emptive burnout**: in order not to be burned out, the swimmer comes to practice only when she feels like it, doesn't work out very hard, skips team meets with regularity, and generally makes no commitment to the program or to the sport. Not surprisingly, the swimmer swims slow, makes little or no improvement, and sees her formerly slower competitors whiz right by her. Then we wonder why she *"just can't get jazzed about swimming"*.

Sitting on the fence and remaining lukewarm on principle has nothing to recommend it

Discipline and commitment are good things, not things we should downplay, hide, apologise for, or – worst of all – stop demanding because it may be unpopular. If you want to enjoy swimming even more, commit more of yourself and swim fast! You do not become excited about an activity you don't do well at.

Home and pool must dovetail

Traits of discipline, respect, high expectations, and commitment at home directly relate to the child's characteristics at practices and meets. This is yet another area where family support is crucial to the success of the swimmer. Parents should review, carefully the Credo and other formative memos about the values the team espouses. If the current at home is flowing in the opposite direction from the current at the pool, there will be big problems. If the family does not buy into the program, they will be very unhappy here.

PREVENTING INJURIES IN AQUATIC ATHLETES

(Part 2)

By Edward H. Nessel, R.Ph, M.S., MPH, PharmD.

Part 1 dealt with the most prevalent and potentially most debilitating injury in swimming: swimmer's shoulder. This is part of a group of overuse injuries called repetitive strain injuries (RSI). Another such RSI that can limit a swimmer's performance involves the second most abused joint: the knees. Though it is widely assumed that swimming provides the almost perfect non-contact athletic endeavour and presents itself in an anatomy-friendly gravity-free environment, it is just this condition that can cause problems. The body has a tremendous ability to adapt to its surroundings, though in some cases it may take as long as two

or three years. The more the body swims, the more it gets used to gravity-free ... not having to deal with the pounding and stresses gravity can produce on the body day-after-day.

Cross-training on land can thus set the swimmer up for a fall by placing too much pressure on the rather delicate joints of the ankles, knees, and hips. It is all too often where swim coaches have their athletes do various vigorous activities on land, so self-assured that this cross-training (running steep steps, long runs up and down hills, continuous-walking deep-knee bends, and the like) will produce a positive holistic effect that movement on land becomes a mandatory part of daily aquatic training. This may work for some, even more than some, but in the long run this practice is putting the aquatic athlete in harm's way. The only exception to this premise is the training of tri-athletes, which, by the very nature of their chosen events, must bridge the gaps between the environs of water (gravity-free), mechanical (bicycle), and gravity (land-based).

Unfortunately, this is now coming to the fore (with epidemiological studies) with the increased incidence of osteoarthritis (wearing away of bone, cartilage and other joint elements) in all age groups... particularly the damage that is now being seen in many of the articular (joints) areas of the body. Keep in mind the sage rule of trauma and over-use ... **the body never forgets**. Trauma, no matter how seemingly trivial, can leave its **footprints** with the body, and the older the athlete, the less likely he will be able to remove these **footprints** and totally repair the physical insults.

On land (with each step taken) the moving body puts pressure about equal to three times its total weight on the knees and hips. Add weights to knee bend exercises or movements, and the pressure can mount to 13 times body weight. The soft cartilage actually needs this pressure (up to a point) to squeeze it and push out the fluid that bathes it. Like squeezing a sponge, once the pressure is released, the surrounding nourishing liquid is absorbed back into the cartilage tissue bringing in substances that allow it to thrive and function properly. That is all good and well as nature has adapted man to functioning on land but within limits of intensity and endurance. If land-based exercise is not overdone, nor trauma sustained, the knee would be expected to function as designed for many years. But most devoted athletes put themselves in bodily-harm's way, exposing themselves to the demands of their chosen sports ... many with later-life experiences in pain and reduced function and mobility.

Water, on the other hand, is not supposed to place the joints in this type of peril. But the knees still endure a slow, continuous barrage of mechanical insult with increasing intensity as swim training is increased over several years. Intermittent discomfort can lead to continuous pain .and then damage... many times becoming permanent. Some athletes are blessed with cartilage and connective tissue that adapts appropriately to the mechanical stresses placed upon them, but most are susceptible to varying extents. Add the stresses of land-based movements and many a promising career can be placed in jeopardy or pain and discomfort instituted as daily burdens to endure.

Of all the racing strokes, it is the Breaststroke that forces the knees to endure the greatest tension. The nature of the stroke requires the crisp snapping together of the legs through a motion that is truly not joint-friendly. The greatest stress is placed on the medial (inner) aspect of the knees as they whip toward each other to produce forward propulsion. In addition, the torquing effect upon the knee joint at each wall for each open turn can place the knee in a position that stretches and twists the ligaments, tendons, and the menisci within the knee capsule proper to cause inflammation, swelling, and osteoarthritis. These menisci are fibro-cartilaginous crescent-shaped discs at the inner (medial aspect) and outer (lateral aspect) areas of the knee joint that act to separate the cartilage ends of each bone and cushion their movement.

Pain upon any type of movement is a sure sign of pending trouble. Normal movement of the knee (mostly up and down or with some side-twisting) should be smooth, pain-free and silent. In fact, as nature has intended, the movement of the patella (knee cap) in its groove as the leg is extended provides the two most slippery surfaces known to man.

DECIPHERING KNEE PAIN

Extensor chain pain is by far the most common source of knee pain. Leg extension is the movement of the bent leg toward a straight position, and the extensor chain is the series of muscles, tendons, cartilage, and bone which connect the thigh to the lower leg and hinge at the knee. The large quadriceps muscle attaches around the knee for natural protection, while the kneecap (patella) is attached by means of its own tendon to both long bones (femur and tibia) of the leg. If there is any defect (pain and/or function) in the ability to extend the leg at the knee, the ability to spring off the walls in a streamline fashion will be hampered as will the ability to kick with force in most positions, especially Breaststroke.

Noise of a clicking or grinding nature emanating from the knee joint (as the knee moves through its range of motion) is called crepitus ... something benign, sometimes associated with damage.

Meniscal Pain

The **meniscus** becomes involved when a twisting stress is placed upon the knee joint. This can happen acutely on land with a misstep or a quick cutting motion or a forceful sideways movement against the knee. It can also arise from chronic and repetitive stress on the knees (as seen with veteran swimmers) -producing slow degeneration and tearing.

Meniscal pain is localised to the side of the knee with the tear. It allows for the tear to produce a flap of tissue that can get caught and compressed between the long bones of the leg. This can give the knee the sensation of a painful **locking**. This type of pain is usually sharp and is elicited with twisting and cutting movements of the knee.

A meniscal tear causes **pain with a full squat,** hurts when climbing **up** stairs, and can produce **swelling** at the knee. Twisting tests for a meniscal tear will produce a painful palpable **clunk** felt with movement. Pain is often noticed after physical movement even if the athlete is at rest.

Patella Pain

The patella (kneecap) is a wedge-shaped structure, which normally slides up and down in its groove during extensor chain movement. When the kneecap tracks poorly in this groove, it can lead to painful overuse problems. Normal motion of the patella in the groove does not cause degeneration or pain. Pain with lessened mobility is often characteristic of patella inflammation. This inflammation is usually related to chronic stress at the site from on-land exercise or movement: leaning directly on the knees, running downhill, deep-knee squats (with or without added weights). Kneeling puts direct pressure on a sore or inflamed patella and will produce definite localized pain. Jumping and landing will also produce knee pain.

A condition peculiar to women is the bowstring effect of the kneecap. This comes about due to the hips being wider and thus forcing the kneecap to track outwards of its natural groove. Pain or discomfort starts diffusely directly behind the kneecap. No locking of the knee joint, per se, but a **ratcheting** sensation is felt with movement Pain is often noticed after physical movement even if the athlete is at rest.

With patella pain, an easy diagnostic test is dropped down to a full squat ... no pain ... but raising up again is definitely uncomfortable. The pain is felt right under the knee cap. Sometimes quadriceps atrophy is seen which allows the knee joint to move out of line of the groove nature intended.

What helps is rehabilitation of kneecap inflammations to strengthen the supporting musculature around the knee joint to keep the bending of the knee in proper alignment. Anti-inflammatory medication and ice and heat can work to get the inflammatory condition under control.

HOW TO DISTINGUISH MENISCAL VERSUS PATELLA SYNDROMES

WHAT YOU NOTICE	MENISCUS	PATELLA (KNEECAP)
Symptom site	Localised on side of knee	Pain in front of knee, maybe under the kneecap
History of locking	Sometimes locks with pain	Grating, ratcheting, no locking
Weight bearing activity	Pain during activity	Pain after activity, sometimes for hours
With cutting sports	Pain with rotation	Less pain, diffuse if any
When squatting	Pain going down in squat	Pain coming up from a squat
When keeling	Rarely painful	Pain with direct pressure on knee
When jumping or pushing off walls	May be painful	Definite pain, difficult jumping
Doing stairs or hills	Painful going UP	Painful going **down**
When sitting	No pain	Pain in front of knee
Strengthening the support quads	Helpful but won't cure	Often the solution w/leg lifts
Swimming Breaststroke	Pain as the legs come together as kick finishes	Pain as legs bend and heels come up to butt
Swimming other strokes	No real pain with dolphin and/or Freestyle or Backstroke kicks	Pain in the knee as the knee bends with flexible kicks
Pushing off walls in turns	Twisting off wall causes pain on sides of knee	Pain at knee with flip turns or straight turns leaving the wall

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MEDIA
WHAT HAVE YOU DONE TO SPORTS?

By Gary Wicks, St. Olaf College

I feel slightly uncomfortable presenting this paper today. This is the second time I have attended this conference and feel it is one of the best offered. I am an outsider, as it were, an academic surrounded by journalists who earn their keep by reporting sport to the world. And I am going to talk about problems I see in sports media. My point of reference is American sport and sport media, but I submit that we are the model that many in the world are striving to imitate. It is not inconceivable for similar problems to be identified in the media of any country.

I like sport. I have been a part of sport for a long time. I am troubled, however, by what I see happening in sport and how it is handled by the media. I am a former college athlete. I have coached at all levels from 6-year-olds through college. I am a registered track and field official who has officiated at state, regional, national and international championship meets. I enjoy watching competitions on television and in person, and I am a long-time Chicago Cubs fan. I have had the chance to read my name in the sports pages of newspapers and enjoyed the perceived prestige that goes with that. I have been involved with organised athletics in some form since 1954. Now I am an academic who studies and teaches sport. When I study sport I have found it to a vast and fascinating subject. However, I have found that as I study sport I frequently become frustrated and disappointed in what I discover, and in the contradictions that seem to occur regularly.

As a fan, as well as in my study of sport, I read the sport pages and popular journals, I listen to sports programs on the radio, I watch sports programs on TV, and I am becoming more aware of sports options on the Internet. These are the windows that most people use to access sports. Even though many people attend the competitions, more experience them only through the media. We use this medium to experience sports vicariously. It is a powerful attraction. Television, in particular, has been instrumental in bringing sports to people throughout the globe. The Internet is fast assuming a major role as well. Both have also led the way in changing sport into a media production rather than a game. Because it is such a powerful way to experience sports, it has created some tension and an interesting scenario for the media, and perhaps made its focus less clear.

I would like to consider four points that I see providing contradictions in sport media … (1) what is the definition of sport; (2) the role of coercion in sport journalism; (3) ethical issues facing sport journalists; and (4) the role of media in altering the form of sport.

Mass media has two principal roles … (1) news gathering and processing, and (2) entertainment. In addition, media content, in this case sport', can be used to advertise innumerable goods whose mass production demands an equivalent level of mass consumption. (Rowe 1999) Publicly funded media have the additional responsibility of fostering national culture, a sense of belonging to the nation which brings its various citizens together across the barriers of locality, class, age, race, ethnicity, gender, and so on. We must recognise that sport has become a powerful expression of culture throughout the world. One only has to look at the Olympics or the World Cup to confirm the national role sports plays in countries around the globe. In fact, some may even argue that sport has become the culture of the United States. And Noll has suggested that European sport is becoming more like America's, especially where teams are becoming brands rather than sources of local identity. (Andrews 1998) But this trinity of news, entertainment, and culture creates an environment that is vulnerable to conflict.

Part of the conflict is the ambiguity of just what constitutes sport? How is it defined in one's culture? How do philosophers and sociologists define sport? How do athletes and coaches define sport? Most agree that it is a competition between two individuals or teams of individuals that is governed by rules and where the outcome is to win. Higgs offered three different definitions of sport in his book…

1. Sport is a form of adiphora, or things indifferent, a theological concept that would mean that sports have no effect on cultural values and deserve little attention.
2. Sports belong to what sports commentator Howard Cosell called the Toy Department of Life, not really a serious part of our lives, but nevertheless with a value worth holding on to.
3. Sports, as poet Robert Frost proclaimed, lies near the soul of culture, displaying and even proving all we hold dear. (Higgs 1995)

How about a practical definition? Rupert Murdoch believes that sport **absolutely overpowers** all other programming as an incentive for viewers to subscribe to cable and satellite TV. He told his shareholders in a 1996

message, *"We intend to use sports as a battering ram and a lead-offering in all our pay-television operations."* (Andrews 1998) Successful stations can raise their advertising rates if they broadcast a network program that attracts a bigger audience. Most sporting events may not make money in themselves for the networks, and only the NFL's Super Bowl and baseball's World Series do this consistently. But the point is that once viewers have switched on to one channel, they are less likely to switch to another. As Murdoch has said, sport is TV's best loss-leader. (Andrews 1998) He is also currently learning about the high cost of bidding for broadcast rights.

But how does the sports media define sport? I sometimes fear that media tries to define sport by the content of its pages or programming. That is to say, sport is what is covered in the media. I will allude to this later, but this often becomes gender-biased and driven by the demands of the perceived audience. If there is no audience for your news and programming, then advertisers will not look favourably at you, and then issue of revenue streams enters the picture. But it is important to recognise that sports media tend to define sports by the content of their pages or programs rather than by some more comprehensive definition. And it is very important to remember that big-time media sport is big money.

It has been suggested by Wenner that for the pubic media to fail to produce copious quantities of information and entertainment would imply the unthinkable – that the nation is not dutifully served or, worse, that during breaks in transmission it does not exist! All media – public or private – have to deal with the question of a public. While it is too simplistic to reduce all media relations simply to one group, that is, the audience accepting or rejecting the product of another, such as, journalists, film-makers, pop musicians, television directors, and so on, there is no doubt that, ultimately, audiences are crucial to the success of media enterprises. (Wenner 1998) This need for an audience has led to interesting competitions among the various forms of the media, and within subgroups of the media. It has created sports specific media that produces programming 24 hours per day, seven days per week, which finds itself trying to find more and more creative options to lure and hold an audience. Media has to walk a fine line and be careful not to create apathy in its audiences with its in-depth, behind-the-curtain, full access looks at all levels of players, coaches, teams, and games in its effort to fill pages and time.

An example of what is becoming a more common phenomenon is the Fox Sports Television Network show, *"The Best Damn Sports Show, Period"*. As pointed out in a New York Post article by Mushnick, this show should probably be renamed *"The Worst Damn Sports Show, Exclamation Point"*. (Mushnick 2002) Mushnick contends that the regular co-hosts panellists on the show, that include several former professional athletes, are really grown men who are still adolescents. *"The mission of these adults is to entertain through mean-spirited putdowns, sexual innuendo, insipid trash-talk, and smarmy chit-chat. Sports issues of the day serve both as a catalyst and a mere prop. The show succeeds in its aim, which is between the sewer and below the belt."* This show has become, in large part by default, the showcase program for the Fox Sports Network. Repeated throughout the week and around the clock, it continuously demonstrates the depths to which TV folks – not just sports TV folks – will stoop to attract a young male audience. What is perhaps more disturbing is the lack of moral response to this situation by the media, especially when compared to the quick media responses to the moral wrongdoings of athletes. This begs two questions: first, should the media establish and enforce standards or guidelines for programming, and secondly, and probably more importantly, just what are the ethical and moral obligations of the sports media?

This also suggests that the media is vulnerable to coercion, just as athletes are. Coercion in sports refers to the subtle but very strong pressure put on athletes in their desire to compete. The choice for an athlete is to play during the game or be a substitute on the bench with limited playing time. All athletes strive to be one of the players, and the more elite the level of performance, the smaller the differences between the players. This means that they accept hard training and long hours of preparation. They work as hard or harder in the off-season to prepare as they do during the season to play. This means that they may do things that they normally would not do in other situations. For example, if the coach suggests that the athlete needs to gain strength and bulk, the athlete may resort to performance enhancing drugs. The consequence of not gaining strength and bulk is to not play, to be a substitute, a second stringer. The athlete may be forced into unethical actions, such as cheating or committing violent acts, in order to play. They are coerced into committing these acts if they want to play.

Media is faced with coercion, too. It is important to fill all the pages with words and all

the airtime with programming. What is the reason shows like *"The Best Damn Sports Program, Period"* are conceived and produced? Is it because it is insightful? Is it a concern that if you do not do this the competition will? It is crucial that you create and maintain a loyal audience, because if you do not broadcast popular shows and major events, someone else will. Advertisers respond to options that best support their needs.

There are two good recent examples of coercion in sport media. At the Barcelona Olympics in 1992, there were over 12,000 journalists attending and only 10,500 athletes. (Blain, Boyle et al 1993) Is this a question of redundancy or thorough coverage? Did media feel coerced to cover the Games? Was their role in the globalised media potentially jeopardised? This past summer, Minneapolis hosted the 84th PGA Championships. This major golf event attracted worldwide attention. The major daily newspaper in the twin city of St. Paul, the Pioneer Press, published a 30-page supplement on opening day covering the event. Not to be outdone, the major daily newspaper from Minneapolis, The Star Tribune, published a 56-page supplement covering the tournament on the opening day, and they assigned 26 staff persons to cover the event. The local CBS affiliate radio station did all of its daily program broadcasting live from the golf course for an entire week. One needs to ask, just how much news does one event generate? How many people and hours are necessary to cover this news? These newspapers and this radio station, all large and well-known media outlets, seemed to fear that if they did not cover the event someone else would and they would lose face. I submit they were coerced into that level of coverage.

Over a year prior to that PGA event, Cox wrote an op-ed piece criticising the Minneapolis Star Tribune because of its extensive coverage of the NCAA Regional College basketball games held in Minneapolis. (Cox 2001) Cox begins by remembering when *"the local newspaper was the primary source of information to the community. It delivered news, analysis and opinion that helped citizens make informed personal and political choices. It supported our democratic system of government."* He goes on to state that the bloated coverage of this basketball tournament was representative of how sports coverage has routinely come to dominate this particular paper. He further laments that where else can you find British football league standings and updates from the waiver wire and not find any results of the Minneapolis City Council votes. The paper even hired an ice hockey beat reporter before a City Hall reporter. Sports provide a diversion from the rigors of life. They have been described as *"the toy department of life."* But when the editor of this Minneapolis paper claimed *"the paper would go out of business if it did not provide its readers with a 'fun, useful, and interesting product',"* he says a lot about how this particular paper views its audience.

Perhaps Phillips stated it best as he questioned the justification for the extensive publication and broadcasting of sport. He says that there is a sense in which the media has yet to find wholly and adequate means of covering sport. Where does sport fit in? Is it news, leisure or entertainment? How often should it be given the front page or the peak-time television slot? Does it warrant such attention? Why broadcast live sport and not, say, live theatre? (Phillips 1998)

Sports writers have, what many consider to be, an ideal job. They get to see and write about the things they like. They get good seats at games and are able to talk with celebrities on a regular basis. However, it has also been noted that sports editors are more likely to excuse sloppy writing than editors of other sections in the papers do. Sports writers do not seem to be motivated to advance, except for the few that become sports editors, and sports writers and their editors do not become editors of newspapers. (Wenner 1998) Maybe it doesn't get any better than being a sports writer. They write about public events with results that are public knowledge. Their challenge is to make the audience want to read more about these public events.

The media that deals with sport has to face another problem – the morals, or lack of morals that have become more inherent in sport. Sport at all levels has been racked by one moral controversy after another. It is almost a truism that socialisation into sports nowadays has much to do with becoming adept at breaking and bending rules, not to mention other forms of cheating and violence, as it does with the furtherance of athletic excellence. (Morgan 2002) The media is still trying to come to grips with how it should deal with this issue. It wants to report on the heroes of sport, and by extension, of the culture. But it also seems to be fascinated by the **anti-heroes** of sport, those whose public and private lives are full of problems.

I would like to give a few examples of my concerns. Let's start with the arrest of NBA star Alien Iverson last summer. The episode involved possible charges of domestic violence against Iverson. In this case he allegedly threw his wife

out of the house and onto the lawn, naked, in the middle of the night after an argument. Two days later he apparently forced his way into a cousin's apartment, brandishing a pistol, while looking for his wife. The police were called several hours later and Iverson was arrested and charged. Several things happened with this case. First, the media descended on Iverson's house in a horde. They created a media circus and camped outside waiting for some glimpse of the NBA star or perhaps some tiny bit of information that would result in a story. The intense publicity made Iverson's home a tourist attraction in Philadelphia. The media made a cartoon of the Iverson *"story"* creating a summer serial about a rich family's domestic disharmony. The Iversons served up slices to an insatiable media. The feeding frenzy by the media produced a story that pre-judged Iverson based on previous bits of information that could be dug up. Regardless of the outcome of the legal case, Iverson, and actually by extension, the NBA became ridiculous. The suggestion was that professional athletes were out-of-control and that the NBA did not really care if they were involved in socially unacceptable behaviour as long as they were productive as athletes. The stories condemned Iverson for this alleged act before any trial was held. Charges were dropped against Iverson later in the summer.

This case also suggests that sports writers may consider themselves the nation's moral guardians. Most of the high-minded columnists presumed Iverson's guilt, based in part on his previous weapons charge, but also because sport-writing and broadcasting is, as Rushing states, incapable of acknowledging shades of grey. You are either a great man (based on athletic performance) or a great Satan (based on a personal episode), but you can never be a bit of both. That would suggest that superstars are complex and perhaps human, and I'm not sure we want to consider these stars and heroes as human like us. (Rushin 2002) We want them to heroic – something we cannot be ourselves. It has been suggested that sports in general, and sports media, in particular, are more concerned with doing rather than being. It is easier to write about some one's accomplishments rather than their character. The results of competitions are clear. But often performance on the court, field, rink, and so forth can excuse inappropriate behaviour off the field. We have come to expect this inappropriate behaviour in athletes, so the question is not why, but rather when. Our main concern and the apparent concern of the sports media is to be able to watch the best possible athletes perform in competition. What the athletes do outside the games usually doesn't affect game performance, so what is the big deal? Charles Barkley, former star player in the NBA, was once quoted as saying, *"I was hired to play basketball, not to be a role model."* Perhaps he speaks for too many of us.

A second example in American sport illustrates how media works to create news and audiences. The Super Bowl of the NFL has become a mega event that is built up over approximately six weeks of play-offs. It has become the event with the $40,000/second commercials that are often more entertaining than the game. But more importantly, the Super Bowl has become a daylong event. The Fox Television Network schedule is heavily promoted in a day that features some five hours of "pre-game" programming to hype what is typically a three hour long game where the ball is actually in play for only a few minutes. (Wenner 1998) The networks try to design an event that will attract a vast audience, and consequently advertisers.

This is a phenomenon that I believe is becoming more wide-spread in sports programming throughout the world. We are becoming very used to watching and listening to well-tanned commentators with straight white teeth and constant smiles explain ALL, and I emphasise ALL the intricacies of the game. Often these commentators are former players or coaches themselves, and therefore considered to be legitimate experts. After all, they have been in the middle of these games before, and they have trained and competed and won and lost games and are the ones best able to deliver the insight necessary to better help the audience better appreciate what they will, or have just seen. Networks seem to feel obligated to include former players and coaches on their broadcast crews, regardless if any of them can ask intelligent questions. Often they seem to be more intent on entertaining than informing.

To further illustrate, let's look at how television produces sports events. American television, in particular, has developed a very sophisticated system of broadcasting competitions. Early sports production utilised the equipment and techniques that were designed for studios. Games are played in a variety of venues, often in terrible weather conditions, and in a range of lighting conditions and made for inconsistent production. The results of the game are uncertain but the production quality of the game need not be uncertain. So the task of TV was to make the experience very appealing to the viewers. As Goldlust points out, spectators who buy a ticket to attend a game become a more captive

audience. They are able to watch all the action even if some seats are not as good as others. TV audiences, on the other hand, are more fickle. They can change the channel or even worse, not watch anything at all. The challenge is to make them watch. And this is where the entertainment part of sport media is most significant.

Typically, this is done with a commentary team comprised of an anchor with one or more expert commentators and several roving specialists. Each member of the team has an assigned specific job. Some describe the action; others make assessments or evaluations on strategy, tactics, or technical aspects of the game. Some comment on extra-game aspects relating to the crowd, the venue, and the atmosphere of the occasion. They can also carry out interviews with coaches, managers, players, and even celebrities and ordinary spectators. They update us on injuries during the game.

This commentary team is enhanced with all the technical advances that now give us, in addition to the footage of the actual game, instant replay, reverse-angle views, stop action, and spontaneous or pre-arranged live coverage of non-action events of the game. "International sound" is created by placing microphones around the playing field and around the venue itself. The sources are balanced and mixed together to provide the home viewer with the same sense of the sounds and noises experienced by the spectator in the stadium.(Goldlust 1987) In fact, new sports venues are now built with very sophisticated media production facilities.

And the pre- and post-game commentary, plus the commentary during the game are intended to help the viewer. But what television does here is create an experience that is different than actually attending the game itself, and the networks hope it is one that is more appealing. When I attend a game I watch and may talk about what is happening with friends. But at home when I watch alone or with friends, I am constantly bombarded with more information than anyone needs. All the video options, especially replays and close-up shots provide the TV viewer with a situation that is assumed to be superior to actually watching the game in person. This is how they try to make sure that the viewer does not change the channels, or worse yet, turn off the television.

The print media is involved here, too. The lead-up to big games is filled with speculation and conjecture on the outcome. Match-ups between players or teams or sometimes coaches are examined in depth. Fan interest is hyped and each print media wants them to return to their publication for post-game reporting and analysis. They too are seeking to create a loyal audience.

American football is a very macho sport. It is a man's world, but progress is being made and many deliberate attempts are being made to bring women into the audience. As an example, it is not unusual to have sideline reporters on each side of the field to provide up-to-the-minute and on-site details on injuries, strategies, etc. These are sometimes former players, sometimes male commentators, but also the place where you are most likely to see female sports reporters working an NFL or college game. On the sideline they can provide the latest news, but they certainly aren't expected to be able to analyse situations and provide insightful clarification and commentary. They are still outsiders. They are little more than window dressing, and only a step up from the cheerleaders who also get to stand along the sidelines during the game for our entertainment. In most sports, men are on the field and women are on the sidelines.

Feminists have long complained about the gender bias in sports, but have also suggested that news reporting in general is written by men, interpreted by men, and written for men. (Worshing 2000) This becomes very obvious in sports reporting and sports media and creates a dilemma for program directors and editors. There is a vast potential audience out there – half the population. It is to the advantage of these entities to curry the favour of women. Female sports reporters and writers are now more commonplace, but still not considered as knowledgeable or significant as male reporters and writers. Demographic studies have been completed to try to understand which programming and stories most appeal to this segment of the audience. For example, NBC televises the Olympics by showing parts of competitions, and many personal interest stories of athletes. The latter has been identified as being more appealing to women than actual coverage of a competitive event.

But TV has also had a more direct influence on what we watch. Competition formats have been changed to better accommodate broadcast conditions where 30-minute segments dictate the broadcast day. Specific examples include: the 1988 Commonwealth Bank Cycling Classic in New South Wales, where competitors were ordered out of bed 30 minutes early to complete one lap of the course, then stopped and informed by the organisers that they had unknowingly staged a dummy start for the benefit of a TV crew. They were told the real race would start in 30 minutes. Drivers in the

1989 Australian Grand Prix in Adelaide risked their lives by racing in a blinding rainstorm, because a postponement would have prevented advertisers from reaching a global TV market. The starting times for the men's 100-metre race at the 1988 Olympics in Seoul was moved forward by three hours to start at 2:00 p.m. to accommodate the Americans in prime viewing time. Players, umpires and 95,000 fans of Australian football were forced to wait several minutes for the start of the second half of a game so that Channel Seven could screen a backlog of commercials. The 1992 Indy Grand Prix was moved up three hours so it would not conflict with Channel Nine' s telecast of a World Cup cricket match. Badminton and volleyball matches were re-configured to better match a set time for TV broadcasts. Tie breaks have been added to tennis and golf to better control the length of the matches. The starting times of most professional and collegiate sports in America and the Olympic Games are dictated by television. TV time outs regularly interrupt the natural flow of games on American television. And live coverage with mini-cams has altered the perspective of the viewing audience who watched expedition climbing. Experts fear that spectators will attempt similar climbs without recognising the danger and the necessary training and expertise. (Roderick 2001) It has also been noted that year around media coverage of sport has led to a loss of our sporting calendar, and sports are no longer just played during the traditional seasons. (Winder 201) Seasons have been extended for play-offs so that the fans can watch a sport for months on end. American NBA basketball and NFL hockey are prime examples with seasons that begin in October and conclude in June.

If you look carefully at these examples, you begin to see how the trinity of news, entertainment, and culture become more similar and less distinct. What should be reported in the sports media? What constitutes sports? It sometimes seems that what is printed in the sports pages or broadcast on the sports programs is sport. In other words, the media defines sport. Of course, there are the traditional team sports of soccer, American football, basketball, rugby, baseball, and so on. You will also find coverage of bicycle racing, tennis, golf, and horse racing. But even in this incomplete list you see a ranking of how much coverage the different sports have, and you should recognise that sports with female athletes are not really on this list. It could be argued that the stories are directed at the audience, mostly male from 18-50 years of age. But how do you bring females into your audience?

Here is a further example of content that looks at a moral issue and the audience. A few years ago I attended a national conference on sports ethics, where there was a session with a panel of national sports journalists. Each made introductory remarks and then the floor was opened to questions. A member of the audience asked, *"If I want to find out the going price for a prostitute, I cannot look in the paper for the current market price. If I want to buy some marijuana I cannot check in the paper for the price on the street. If I were a paedophile I could not look up the going rate for a child for a sexual experience. But, in the United States, where gambling is legal in only one county in the entire country, I can look in any sports pages in the country to find out what the betting 'line' is on most major sporting events. Why?"*

The first response from the panellists was silence, followed by some squirming and shuffling of papers ... then, the guarded responses. Basically, to a person, they said that the betting line was published because the editors wanted it included and the readers demanded it. It did not make any difference to them that sport gambling is a major problem in the United States, and organisations like the NCAA are trying hard to combat its influence on the college games that are played. Even a recent news article in the Dallas Morning News suggested that gambling interests motivated the judging scandal at the Salt Lake City Olympics. (Harasta 2002)

Isn't this .an interesting contrast from the same people who rise to high moral ground when athletes do things they shouldn't, like the Iverson case mentioned earlier? The legality or morality of the issue is not as important as something that may enhance readership and make the advertising dollars more secure. The sports reported in this case seem to be dictated by audience. Is that wrong? Or is that just smart journalism?

Sports media is a part of a growing global communications complex. It is recognition of the growing role of sport in the global culture. That does not mean that there are not problems. I submit that sports journalists are becoming more and more like pawns in this push to join this growing enterprise. The role of sports journalism seems to be evolving more towards entertainment and away from news.

Part of the problem is related to an ambiguous definition of sport by the media. Part of it results from the coercion to produce news, regardless of its significance. Part of it is how the media responds to ethical issues in what it

reports and how it reports it. And part of it is a result of how the media wants to re-package sport to fit broadcast parameters.

This brings me to my most disturbing thought that the only real game that is played is gambling. Everything else supports and enables this game to be played. Perhaps this is the role of sport in society – to provide the means for gambling. Games and competitions provide the opportunity for gambling. We speculate on the outcome before the competition is held, and then place our bets. In fact, sometimes the actual competition is anti-climactic when it does not meet our expectations. Sports media specialises in this with articles by writers and columnists that provide all kinds of insight into what may happen in the contests. It is scary to contemplate if this is true – that games and competitions serve primarily as facilitators for gambling interests. If it is, and we enable it to continue, then it is a terrible loss for everybody.

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GOOD WORDS

- "Discipline yourself and others won't need to." *Coach John Wooden*
- "Hustle is talent." *Hall* of *Fame basketball player Bill Russell*
- "Sloppiness is a disease. Nobody ever built a great organisation just worrying about the big things. It's the little things that give you the edge. The important thing is to find people who are committed to detail and to standards of excellence." *Coach Joe Paterno – borrowed from the Tuft's University Men's Swimming & Diving Team Booklet*
- "You play as you practice." *Coach Red Auerbach*
- Paraphrase: Wrap your toes over the front edge of the block and when the gun goes off – just race baby. The time will take care of itself. *Coach Jack Nelson, Fort Lauderdale Swim Team, also in ASCA's inspirational stories audio cassette*
- Paraphrase: Winners see what they want to have happen. Losers see what they are afraid might happen. *Brian Goodell shortly after winning the 400 & 1500 Freestyles in 1976*
- Paraphrase: The roar of the crowd was deafening. *Jeff Float, USA Swimming Olympic tri-captain describing the excitement during the 1984 Olympics following the USA victory in the Men's 800 Freestyle Relay.* For those who may not know, Jeff is hearing impaired and that victory was dubbed the Gross Buster Relay. The relay members were Mike Heath, David Larson, Jeff Float and Bruce Hayes.
- "Nurture great thoughts for you will never go higher than your thoughts." *Benjamin Disraeli*
- "People of mediocre ability often achieve success because they don't know enough to quit." *Bernard Baruch*
- "All world records can be knocked down two or three seconds if you can turn off your pain switch. The major portion of training is to put yourself through as much pain as possible. Then in a race, you get to a point where that amount of pain doesn't bother you." *Mike Bruner – former world record holder and Olympic 200 Butterfly gold medallist*.
- "Pain is temporary. Pride is forever." *Seacoast Swim Association – Dover, NH*

SWIM COACHING FROM THE HEART

Mike Collins (7/9/02)
Notes by Laura Matuzak

Based on the book, "Everyone's a Coach" by Ken Blanchard and Don Shulz

- Ken Blanchard also wrote "The One-Minute Manager"
- "Principle Centered Leadership" by Steven Covey is another great resource
- Coach antonym…
  C = conviction-driven
  O = over-learning
  A = audible-ready

C = consistency
H = honesty-based

Conviction-Driven

- Effective leaders stand for something … acquired over time – establish early
- Define what excellence means to you and your organisation
- VVMOST (from ASCA)
  Values
  Vision
  Mission
  Objectives
  Strategies
  Tactics
  Remind everyone of your core values
- Self-confidence
- Establish self as a leader
- Keep winning and losing in perspective
- Value respect more than popularity
- Prize character and ability
- Lead by example
- Enjoy what you do

Over-Learning

- Limited number of skills to work on at one time
- Make athletes master each skill
- Develop automatic perfection – do it right without thinking about it
- Reduce practice errors … limit the number of skills, do it right repeatedly until they do it right, then add on – do it right without thinking about it = automatic perfection
- Effective leaders demand practice perfection
- Pay attention to the details … show that you care – don't yell – rather make them repeat the set because you know that they can do it better – watch and learn from other coaches – find a different way of saying it
- Levels of learning … unconscious incompetence – conscious incompetence – unconscious competence – conscious competence **(Nirvana!!)**
- Examples … spend time on the mechanics (one can do calculus because one can add) – perfect push-offs every time – correct body alignment before going fast – benefits of a strong foundation – low intensity and work on skill, then build up to greater intensity (stop when can't hold the skill and return to the intensity level that they can handle)

Audible-Ready

- Ready to change the game plan when the situation demands
- Flexible, modify plan when it is not working … change without compromising your principles
- New ideas
- Open to suggestions
- Don't let ego get in the way … don't throw away message because of the sender
- Teach athletes this flexibility … crowded warm-ups – surprise them in the workouts – coaches need to understand what the athletes are going through

Consistency

- Predictable in response to performance … treat best times by different swimmers with the same response – be consistent with praise and punishment
- Don't act according to mood … let it go – be an entertainer – performance (bon no matter what) – get everyone on the party-bus of success
- Notice bad and good … catch people doing it right
- Encourage consistency in your athletes … it's OK to be tired, sick, etc., you can still perform – Mike Barrowman: when he set the 200 Breaststroke World Record, he said that he felt awful; hard training allowed him to push through
- Starts in training

Honesty-Based

- High integrity
- Clear and straightforward in interactions … be honest without attacking – the message is lost if it is poorly delivered – non-confrontational (get them to realise that they need to improve themselves)
- Find this quality in talented athletes … they still want help with their weaknesses
- Terry O'Brien idea … have 10 positive sticks in your pocket – remove one when you have made a positive comment to your athletes – Goal = to have an empty pocket at the end of practice
- Eliminate any gaps or inconsistencies between your values and your actions … these inconsistencies are why swimmers do not get 100% best times – popping popcorn analogy: missed swim practice is like throwing away an un-popped kernel before popping the popcorn; the goal is to fill the popcorn bowl with kernels to pop at the end of the season; talk to them about these things
- Sense of humour … take the job seriously and yourself lightly – stop yelling and start teaching (they tune out the yelling; talk quietly and force them to listen)

Questions

1. How much of unconscious competence is based on talent?
   It has a lot to do with talent. The point is to teach swimmers to reach this level. Bill Boomer says that this is teachable.

2. You say that we shouldn't coach according to our moods. What happens if they create the mood?
   Be flexible. Refocus them without letting them control you. Punishments ideas: (a) Make them hold the push-up balance position. (b) Make them get out and dance with the coach. Creative punishments bring their mistakes to their attention while keeping it effective and fun.
3. How do you get your coaches to be more flexible and fun?
   Some coaches are teachable, some coaches have an attitude.
4. How do you deal with kids who don't want to be there?
   Coach Collins talks to the parents and asks them what they can do together about the situation. It is important to put the control in the hands of the kids. Let them choose whether they want to give 100% or stay home. Sometimes kids just need a challenge, so ask them if they want to move up a group. The kid's goal is often the parent's goal. Often the kids can't separate themselves from the parents. Go out of your way to educate the parents about acceptable behaviour. You may have to use behaviour modification with the troublesome kids to give them motivation to receive positive rewards.

IN THE SWIM OF THINGS

By Eric Lazzari (14/12/2000)
Naperville Riptide Swim Team

A couple of weeks ago, I had the opportunity to work at a USA Swimming Catch-the-Spirit Camp. In the session I facilitated titled *"Practice Preparation"*, I asked the swimmers and coaches in attendance to list the things that you should bring to practice every day. As a group, we came up with quite a long list covering everything from goggles to a friend. We all found out that there are many things that go into having a successful and productive practice.

In this week's column we are going to discuss Coach Eric's **Top Five Tips for successful Practices**.

BE AT PRACTICE ON TIME

Often missing even the first few minutes of practice can have a negative effect on the entire practice session. You may miss valuable instructions and feel like you are playing catch-up the entire practice. If you are late, you will miss part of warm-up and then your body will not be ready when it comes time for the main set. The beginning of practice is a time where swimmers have the opportunity to work on new skills and stroke modifications and we want our swimmers to be able to take advantage of all opportunities presented to them. In order to set yourself up for a great practice, make sure you arrive early enough to be ready to get in the water at the scheduled start of practice.

BRING ALL OF YOUR EQUIPMENT

All of the equipment our swimmers have in their bag serves a specific purpose. Some days we will use multiple pieces of equipment, other days we will not use any at all. When we are using equipment, its purpose has been designed into the workout and if you do not have the proper equipment with you, the goal of the set may not be met. Included in the equipment you bring to practice every day is a water bottle that should be filled and ready to go at the start of practice.

HAVE A GOAL

Every practice, have a goal for something that you want to accomplish. Maybe it will be to not breathe into any of your turns, or to make sure your head position is correct ... it can be anything that you need to work on. Committing to a goal before practice will give the focus you need to practice championship habits. Try to set goals for each week of practice and each set of practice as well. The little successes of achieving daily goals add up to big successes at the end of the season.

CONSISTENCY IS THE KEY TO SUCCESS

There are few things that are absolutes in life, but one of the things that is almost certain with swimming is that those athletes who come to practice every day are usually the ones who improve the most during the course of the season. This is because they are practicing the same skills every day, which makes them into championship habits. In taking a day or days off, skills learned one day may be gone the next. Taking several days off negates improvements in fitness levels. Coming to practice and working hard on a consistent basis are the surest ways to make sure you improve.

STAY POSITIVE AND SMILE

The two most important things you can bring to practice every day are a positive attitude and a smile. Even if you have had the worst day ever, try to force a smile onto your face and you will probably feel better. And remember, a positive attitude is infectious ... if you have a positive attitude and smile, it is likely your teammates and coach will also. If you feel that you are going to say something negative during practice, go underwater and yell it. Avoid the phrase, *"I can't"* because you can and the coaches do not ask you to do anything you are not capable of. Take adversity and difficult

tasks and look at them as a challenge that you can overcome.

HEART RATE & LACTATE RESPONSES TO SWIMMING IN VARIOUS DRAFTING POSITIONS

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The article ... "Heart rate and lactate responses to swimming in various drafting positions" examines the effect of drafting on indicators of energy expenditure during swimming. The authors showed that when swimming in a 4-person line, the swimmers behind the leader have lower heart rates and blood lactate concentrations. This is an indicator that they expend less energy than the lead swimmer. Being further back in the line of swimmers did not seem to provide more advantage. The importance of this work is in practice situations, where a swimmer often swims only a few metres behind the person in front of them. In such a case, they should be expending less energy than they normally would when swimming at the same pace. When put in a competition, where they are alone in the lane, their times might not be as fast as they had experienced before.

ABSTRACT

This study examined the effects of drafting in swimming on heart rate and blood lactate in collegiate swimmers. Subjects consisted of two groups, one male and one female. Subjects swam eight 400m swims with the swimmers in a straight line. They swam in each position in the line (1, 2, 3, 4) *during swims where the subjects were separated by five or ten seconds (5-sec draft, and 10-sec draft, respectively). Heart rates were measured immediately post exercise. Lactate levels were measured two min post-exercise. Heart rates were significantly higher in position one in both the 5-sec and 10-sec draft conditions (p=0.015), but were not different between positions two through four. Lactate levels were significantly higher in position one than in position three or four in both drafting conditions (p=0.001), but positions two through four were not different. Results indicate that whether a person is swimming in a 5-sec or 10-sec interval draft the leader of a multi-person draft appears to expend more energy based on heart rate and lactate data. It can be concluded that there is a drafting effect in swimming, but little apparent change in energy expenditure the further back in the draft the person is swimming. These results may have implications for training swimmers when pool conditions dictate that numerous people swim in the same lane.*

INTRODUCTION

One method by which athletes try to lessen the physiological demands of exercise is by drafting. Drafting has been defined as "following closely behind in the air flow, or wake of another athlete (1)." The result of drafting is a lowered air or water resistance, and thus a less demanding performance for the drafting athlete (6). When performed properly, drafting should result in lower energy expenditure at any given speed, conceivably allowing a less skilled athlete to keep pace with an athlete who is actually faster. Drafting has long been a part of cycling, and studies have shown that drafting does decrease the cost of this activity, as well as other activities, such as running, cross-country skiing, and speed skating (2, 3, 5, 9-12, 14). The research on drafting in swimming has been limited (1, 4).

Swimmers are often put in crowded conditions during practices. Because of crowded pool conditions, six or more swimmers may occupy one lane, which will inevitably result in drafting. Drafting may decrease the energy expenditure during practice. During pool competition, though, the opportunity to directly draft is not present. Drafting during practice could reduce the physiological adaptations that should occur with training if some swimmers drafted more than others. This situation might be detrimental when the athlete must then compete as an individual, suddenly experiencing increased energy expenditure and possibly earlier fatigue. A recent study found that there was a significant reduction in all the measured variables including blood lactate, heart rate, and recovery VO_2 while drafting compared to swimming alone (1). Another study showed that swimming triathletes had faster swim times and lower lactate levels when drafting than not (4). These studies did not examine a situation common to the pool setting, however, where lines of swimmers may complete lap after lap in a direct line. The hypothesis tested was that drafting in swimming would decrease the physiological response at a constant speed. We also wanted to determine if the position in a draft line altered the effects seen with drafting.

METHODOLOGY

Subjects

Eight collegiate swimmers (4 male, 4 female) volunteered for the study after giving their

informed consent. The study had been approved by the University's Institutional Review Board for Human Subjects in Research. All were accomplished swimmers and used to swimming in a drafting situation. Subjects trained an average of 5,500 metres per day, 5 days per week. Within each group, all were of a similar height (mean + SD) (males 181.0±7.2 cm, females 164.6±6.4 cm), cross sectional area as measured by a photographic technique (13) (males 863.9±41.3 cm2, females 774.8±50.3 cm2) and speed (males 1.34±0.04 m/sec, females 1.29±0.075 m/sec) as determined in the trial swim to ensure that an ideal drafting condition should occur and that one swimmer was not following behind another of greatly different size.

Swim Trials

Testing took place in a 50m indoor pool with the water temperature held constant at 800F. On each test day the swimmers swam a standardised 1200m warm-up. On day one, each subject performed a 400m trial at 100% effort to establish an experimental best time (EBT). This was used to determine the speed at which the swimmers were asked to swim during the drafting trials. Ninety percent of the slowest EBT of the males and the females was the chosen swim speed for that group. Each group (male and female) then performed eight 400m swims at a speed of 90% of the slowest EBT for that group. Each subject swam as the first, second, third, and fourth swimmer, using a blocked design, where on successive trials the swimmer moved forward one position. Then when they got to the first position in the line they moved to the back. Testing took place on four days, separated by at least 48 hours, with two trials each day. Pace lights (Pacer Products, Batavia, IL) were used to establish and control the speed. The lead swimmer followed lights that flashed in succession along the bottom of the pool, while the other swimmers visually maintained their drafting distance. Heart rates were obtained and blood was drawn for lactate analysis after each swim for each swimmer. During four trials, swimmers were instructed to begin five seconds after the swimmer before them (5-sec draft) and during the other four trials they were instructed to begin 10 seconds after the preceding swimmer (10-sec draft). At the speeds used, this resulted in a distance of approximately six and 12 meters between the swimmers in the 5-sec and 10-sec draft, respectively.

Measurements

During the trials, lactate and heart rate were monitored. Heart rate was measured using a heart rate monitor (Polar Accurex Plus HRM, Polar Electro Inc. Port Washington, NY). The swimmers wore the heart rate watch that displayed the heart rate. Heart rates were obtained immediately post(<5 sec) exercise due to the difficulty associated with stopping the swim to check heart rate at each lap.

Blood was obtained from a finger stick sample two minutes post exercise. The samples were analysed with a lactate analyser (YSI 23L, Yellow Springs Inst, Yellow Springs, OH) that was located at poolside and calibrated with 0, 5, and 10mM standards.

Statistics

Means and standard deviations were calculated for the dependent variables blood lactate and heart rate, at each drafting condition for each swimmer. The data were analysed using a 2-way (position X draft distance) repeated measures ANOVA to determine if differences existed among the trials for any of the variables. Alpha was set at the 0.05 level of significance. When significant differences were found, a Tukey's post hoc test was used to determine where the differences existed. Separate analyses were not performed for males and females since the target times were similar (see results section).

FINDINGS

After performing the 400m swim trial to determine the EBT, the eight subjects were split into groups of four, one male group and one female group. The experimental best time for the female group was 5.16±0.13 min (5:10.0) while that for the male group was 4.99±0.14 min (4:59.4). This yielded a calculated target pace for the females of 5:28.5 and for the males of 5:21.3.

The average pace achieved by the two groups was within two seconds of the target pace. The males averaged 5:21.1 and 5:23.3 for the 5-sec and 10-sec draft trials, respectively, while the females averaged 5:28.3 and 5:28.5 for the trials. In no case was the trial more than 4.1 seconds different from the target pace. These differences were not significant based on T -test of the expected versus actual times.

Heart rate data were collected post-exercise for both the 5-sec and 10-sec drafting conditions and are shown in Figure 1. There was no significant difference between the drafting conditions (5-sec and 10-sec), nor was there a significant interaction between the drafting condition and the position in the draft (1, 2, 3, or 4). There was a significant difference, however, in heart rate based on the position in the draft ($p=0.015$). Heart rates were nine beats higher in the first position in the 5-sec draft and four beats higher in the 10-sec draft compared to the other positions. Although there appeared

to be a difference between the 5-sec and 10-sec drafting conditions, it was not significant. Post hoc analysis showed that there were differences between the first position and all other positions. There was not a significant difference between any of the other positions, however.

The lactate values taken 2 min post exercise are shown in Figure 2. These data followed a similar pattern to that of heart rate, in that no significant differences were found between the 5-sec and 10-sec draft conditions and there was no interaction between the drafting condition and position. There was, however, a significant difference ($p=0.001$) based on the position within the drafting line. Blood lactate values were approximately 0.5mM and 0.4mM higher in the first position in the 5-sec and 10-sec draft respectively than in the other three positions. The post hoc analysis showed significant differences between the first and third and first and fourth positions. Again, the values appeared to be lower further back in the draft line, but the differences were not significant.

DISCUSSION

The practice of drafting in some sports has been recognised as a means to lessen the stress placed on the body, thus delaying fatigue (8). Drafting allows for lower resistance to be placed on the body of the drafting athletes, creating a more economical performance (6). The present study attempted to verify that drafting effects occurred during swimming. We also wanted to determine whether the effects occurred at two different distances following the preceding swimmer, and whether the effect was different when following one, two, or three swimmers in a line.

This study used heart rate and lactate levels as measures of intensity of exercise. Results indicated that regardless of whether a 5-sec or 10-sec draft was used; there was a significant decrease in heart rate between the first position and the other positions. This indicates that it is more energetically demanding to swim in the first position in either condition. Even though there was not a significant difference in heart rate between the 2nd, 3rd, and 4th positions, the trend indicates that there was a slight decrease in heart rate in those positions in both drafting conditions. Similar trends, although not significant were seen between the 5-sec and 10-sec draft, with heart rates slightly lower during the 5-sec draft. Interesting was the fact that there was no difference between drafting conditions, indicating that the wave behind a swimmer will allow drafting even for someone 10 seconds behind.

These data agree with the heart rate results of Bilodeau, et al (2, 3) in cross country skiers, who showed a significant decrease in heart rate between the first skier and the drafting skier. Data from Rundell (12) also showed a significant decrease in the heart rate of a drafting speed skater, while similar results have been found in kayakers, as well (7). These results substantiate, but extend, those of Bassett, et al (1) on drafting in swimming. They studied only one person drafting, but found a decrease in heart rate in the drafting swimmer.

The only published study observing a multi-person draft was by McCole, et al (9) in cycling. They found that while energy expenditure was decreased for the drafting rider, there was no difference between drafting in a line behind one, two, or four riders ... but drafting behind a pack of eight riders provided greater energy savings. While comparisons are difficult to draw between these studies due to the differences in speed, drafting distance behind the leading person, and the resistance of the medium, the results are similar to those of the current study. That is, drafting provided a significant energy savings, but drafting behind more than one swimmer in a line did not significantly improve on that energy savings.

Lactate levels showed similar results to the heart rate data. Again, the 5-sec and 10-sec conditions were not different. There was a significant decrease in lactate levels between position one and three or four. This decrease in lactate concentration was similar to the decrease seen in heart rate.

Our lactate data also corroborate the results from previous studies on drafting. Rundell (12) found a significant difference in lactate between the lead skater and one drafting. Bassett, et al (1) and Chatard, et al (4) found similar results in swimmers, in that the trailing swimmer had a decreased lactate concentration compared to the leading swimmer. As mentioned, however, these studies used only a leading and a following swimmer, as opposed to a line of swimmers, and had swimmers following very closely behind the preceding one.

In summary, drafting 5 seconds or 10 seconds behind a leading swimmer appears to decrease the energy requirements of swimming, as shown by lower heart rate and blood lactate data. It was shown that the heart rates in position one of a four-person line were significantly higher than in the 2nd, 3rd, or 4th positions, but the difference among the trailing positions was not significant. Lactate levels were lower in the 3rd and 4th position than in the 1st. No differences in the variables were seen between the 5-sec and 10-sec draft. This was surprising, as it was expected that the

wake of the swimmer directly ahead of the drafter would not be large enough to span the distance covered in a 10-sec draft, approximately 12m.

Figure 1: Heart rate values obtained during the 5-second draft (●), the 10-second draft (■), and under the combined combinations (▲). * Indicates difference of mean condition from position one ($p<0.05$).

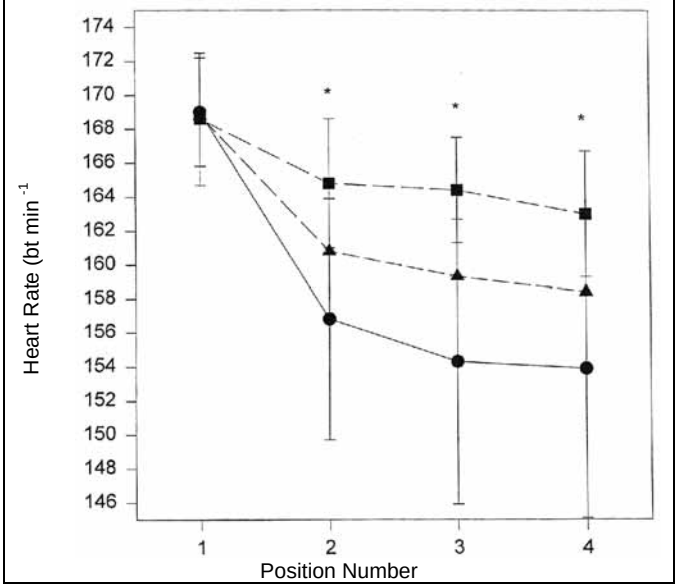
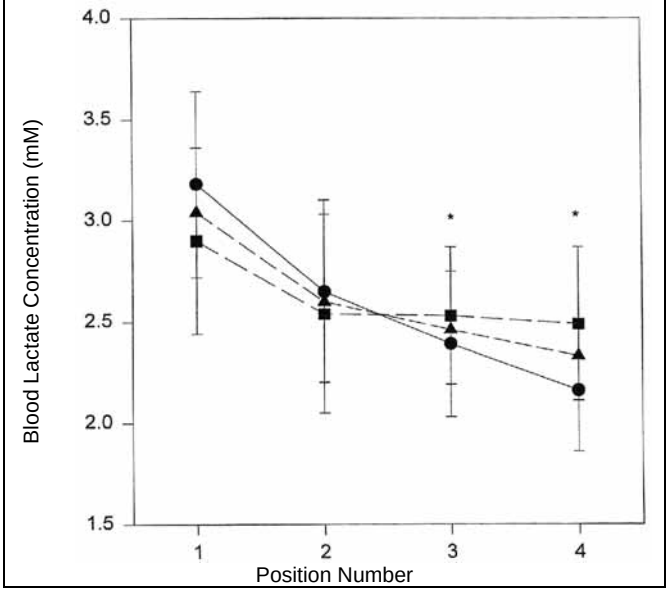


Figure 2: Blood lactate concentrations during the drafting trials. Symbols are the same as Figure 1.



APPLICATIONS

The applicability of this study is in its importance to swimmers and coaches. This is the first study to examine the effects of drafting in swimming at various distances behind a leading swimmer and at different positions in a pace line. There exists a very real potential in a pool situation for athletes to be swimming at a lower relative power output than would be predicted by their lap time. In many cases, swimmers must swim in line within their lanes during training with numerous swimmers in each lane. Such a practice is necessary because of limits in pool time and space, and because of the number of athletes needing to practice at once. In such cases the athletes may swim close (only a few metres) behind a leading swimmer. Coaches, athletes, and scientists have suspected for years that swimming in the wake of another swimmer made the task easier. The present study is the first to show that swimming even 6-12 metres behind a leading swimmer decreases heart rate by 4-9 beats per minute, representing an energy savings in the range of approximately 3-8%.

When this type of training is done, the swimmer, and possibly the coach, would record times per lap and assume a certain difficulty of the task being performed. When the swimmer is in a lane alone, however, to accomplish the same pace requires about 3-8% more energy expenditure. This increased energy expenditure requires the swimmer to either decrease their pace from that which was done during swimming in line or decrease the distance at which they could maintain the set pace. Either option is viewed negatively by the athlete and coach. Future research should be directed to understanding the magnitude of the drafting effect and the effect of drafting distance on the energy requirements.

To avoid some of these complications, it would be suggested that swimmers in lanes maintain as long a distance as possible behind the preceding athlete. This will allow the athlete to keep the intensity of their workout as close to the expected as possible. An alternative to this practice would be to monitor heart rate, either at the end of a set of laps by counting pulse or with a heart rate monitor. Such monitoring of heart rate would document to the athlete and to the coach that the swimmer was working at the desired intensity. While the measuring of lactate, as we did in this study, may be useful, minor changes in energy expenditure will often not show up in blood lactate changes simply because of the variables inherent in blood lactate concentration. These variables include such things as diets composed mainly of carbohydrates or low in carbohydrates, and day to day variability in a person's response to a work load, and would ender blood lactate measurements less useful when determining differences in power output that were likely to be less than 10%.

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SPRINT PERFORMANCE TIMES RELATED TO BLOCK TIME IN OLYMPIC SWIMMERS

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Coaches often proclaim that a race can be won or lost on the start. This could certainly be the case in a close race, but this article attempts to illustrate that getting off the blocks quickly is no guarantee of winning the race. In fact, in Olympic 50 and 100m Freestyle races, as much as 88% of the variability in performance can be attributed to factors other than block time. The range in block time among these swimmers is small, and finalists were not faster than those not making the finals. Although block time is easily measured with today's technology, coaches should not dedicate an excessive amount of practice time towards reducing block time. Attention should also be focused on the other phases of the start (flight, entry, underwater, etc.) that contribute to reducing the time it takes the swimmer to reach 10 metres.

ABSTRACT

Due to the brief duration of the sprint events in swimming, an efficient start has been viewed as being essential for success. To test the hypothesis that performance time is related to the time interval from the start signal until the swimmer's feet leave the starting blocks (block time), 225 performances from the 1996 Olympic 50 and 100m Freestyle events were analysed. Performance time and block time (BT), which is published in the official Olympic results, were used for analysis. Correlations between performance time and block time were weak but significant ($p<0.05$) for men in the 50 Freestyle ($r=.35$, $N=63$) and women in the 100 Freestyle ($r=.29$, $N=48$). Therefore, block time accounted for only 12% of the variability in performance time for men in the 50 Freestyle and only 8% for women in the 100 Freestyle. Men and women did not differ in BT for either event. Swimmers in the 50 were not faster off the blocks than swimmers in the 100. There were no differences in block time between finalists (top 16) and non-finalists for any event or sex. It is concluded that for sprinter swimmers at the Olympic level, the start is a minor factor in determining total performance time.

INTRODUCTION

The prevailing belief among swimmers and coaches is that a 50m or 100m sprint race can be won or lost on the start (6, 21). Therefore, considerable effort has been devoted to improving the mechanics of the swimming start in hopes of achieving improved performance in sprint events. Consequently, it would be of importance for both coaches and swimmers to know if the start is really a significant factor in performance. Do the fastest swimmers have the fastest starts?

The start has been a popular subject for swimming research. Numerous studies have been conducted to compare types of starts, such as the conventional arm swing, the grab, and the track start. A comprehensive review of 15 studies up to 1978 is presented by Sue Lewis in *Swimming Technique* (18). At least another 12 studies have been conducted since 1978 (1, 2, 7, 8, 9, 11, 12, 15, 16, 22, 25, 26). Methods used to collect data on start performance include analysis of 16mm film or videotape, measurement of forces by

transducers in the starting block, and measurement of time to a fixed distance using a thin line of a given length. Some of the studies using film or video were conducted during actual competition. However, all the studies requiring instrumentation for recording data from the starting blocks were conducted under laboratory conditions.

The studies reported in this paper defined block time as the time from the start signal until the swimmer's feet leave the block. A summary of the literature dealing with block time is presented in Table 1. In each of these studies, film or video were analysed to determine block time. The study by Kollias et al (16) was excluded from review because the observed block times are very fast compared to the other studies. When viewed as a composite, the block times in the rest of the studies examined were within 0.23 second from the slowest to the fastest. This is a surprisingly narrow spread, considering the wide variation in ability of the swimmers tested, from age groupers to Olympians. This would suggest that getting off the starting block is a fairly simple task to master and/or that block time is not an important factor in overall performance. Interestingly, the fastest block times were reported in a study which used untrained college students with no swimming experience (18)!

The time taken to perform a movement can be broken down into two parts, reaction time (RT) and movement time (MT) (20). RT is the interval of time between the onset of the starting signal and the initiation of a physical response. MT is defined as the interval of time between the initiation and completion of movement. Block time can be partitioned into two segments, the time from the start signal to the initiation of the start (reaction time), and the time from the initiation of movement until the toes leave the block (12). Reaction time and movement time have been shown to be independent factors in total block time of a swimming start (10).

Selected studies reported women having slower reaction times and movement times when compared to men (13, 14, 23, 24). However, none of the studies reviewed in this paper that compared men with women found a statistically significant difference in block time by sex (16, 22). In addition, Wilson et al (25) found no difference in movement time for 12 men and 12 women Canadian Olympic swimmers, although the men had faster horizontal velocity at takeoff (4.94±0.19 m/s versus 4.25±0.37 m/s) and longer flight distance (4.10±0.27 m versus 3.39±0.17 m) than the women. Kollias et al (16) also found that men leave the block with a faster takeoff speed than women.

The relationship between start time and the time required to complete the entire event was investigated by Arellano et al (1) during the 1992 Olympics in Barcelona. For this study, start time was defined as the time to reach 10 metres, determined by film analysis. Event time was significantly correlated with start time for both men and women in the 50m Freestyle, r=0.91 and r=0.62, respectively. These relationships were also significant for men and women in the 100m Freestyle, r=0.89 and r=0.90, respectively. The relationship between block time and event time has yet to be investigated.

From the above studies, we therefore conclude that men and women do not differ in block time and that performance in sprint events is related to block time. To test these hypotheses, the results of the 1996 Olympic 50 and 100m Freestyle events were analysed. The purpose of the paper is therefore to review the existing data from the Olympic events and to stimulate further discussion and research on the importance of the start in determining performance in sprint events.

Table 1: Summary of studies reporting block time (BT) for a swim start

Author	Subjects	BT(s)
Arellano et al (2)	69 boy swimmers	0.90±0.09
Bloom et al (4)	30 untrained college women	0.99±0.08
Gibson (9)	11 A class boys and girls	0.89
Havriluk (12)	3 college men swimmers	0.81 to 0.91
Kollias et al (16	6 men swimmers	0.62±0.04
	6 women swimmers	0.64±0.07
Lewis (18)	10 untrained college men	0.76±0.04
Miller et al (22)	8 Commonwealth men finalists	
	100 Freestyle	0.82±0.04
	200 Freestyle	0.83±0.05
	8 Commonwealth women finalists	
	100 Freestyle	0.78±0.05
	200 Freestyle	0.82±0.03
Zatsiorsky et al (26	60 men swimmers	0.93±0.08

METHODS

Subjects for the study were participants in the 50 and 100 metre Freestyle events at the 1996 Olympic Games held at the Georgia Tech Aquatic Center in Atlanta, Georgia, July 20-26, 1996. A total of 225 performances from the preliminary heats of the men's and women's 50 and 100 Freestyle events were included in the study.

INSTRUMENTATION

Block time was measured using an Omega OSB7SW Starting Block with Relay Takeover Monitoring Platform connected to an Omega ARES21 timing console (Swatch Timing, Biel, Switzerland). This starting platform has a mechanical contact switch mounted between the top of the starting block and the base. The switch is closed when a swimmer is standing on the platform and opens when the swimmer's feet leave the block following a start. The timing

console reads the output of the platform to a resolution of 0.0003 second, although times are printed to the nearest 0.01 second.

STATISTICAL ANALYSIS

The official results from the Atlanta Olympics listed the time from the start signal until the swimmer's feet left the starting platform for every individual in every event. These times, and the corresponding finish time for that competitor, were entered into an SPSS for Windows, Version 9.0 data file (SPSS, Inc., Chicago, IL) for analysis. An independent groups t-test was used to test the significance of differences in performance time and BT between men and women for the 50m and 100m Freestyle events. The top 16 finishers were compared to the other participants in each event to determine whether or not the faster swimmers differ in BT from the slower swimmers. Pearson product moment correlation was calculated to determine the relationship between block time and performance time for each event and sex. Significance was determined at the 0.05 level.

RESULTS

Mean performance times and the number of swimmers in the 50m and 100m Freestyle events are listed in Table 2. Mean block times for each event and sex are listed in Table 3. Mean BT for the 225 starts analysed was 0.78±0.06 second. Mean BT was not different between men and women in either event. Likewise, there was no difference in B T between the two events ... i.e. the 50m Freestyle was not faster than the 100m Freestyle. BT of the top 16 finishers did not differ from the other participants for either event or sex.

Table 2: Mean performance time and number of swimmers in the 1996 Olympic 50 and 100m Freestyle events

	Women (n=102)	Men (n=123)
50 Freestyle	26.83±1.41 (n=54)	23.89±1.89* (n=63)
100 Freestyle	57.49±1.49 (n=48)	51.37±1.65* (n=60)

* Men significantly faster than women in the same event. (p<0.05)

Table 3: Mean block time for swimmers in the 1996 Olympic 50 and 100m Freestyle events

	Women	Men
50 Freestyle	0.79±0.05	0.77±0.06
100 Freestyle	0.81±0.05	0.78±0.06

Performance time was significantly correlated with BT for women in the 100m Freestyle and for men in the 50m Freestyle, but not for women in the 50m Freestyle and not for men in the 100m Freestyle (Table 4). Figures 1-4 illustrate these correlations.

Table 4: Correlation between performance time and block time for swimmers in the 1996 Olympic 50 and 100m Freestyle events

	Women	Men
50 Free	0.22	0.35 *
100 Free	0.29 *	-0.19

* Significant correlation (p<0.05)

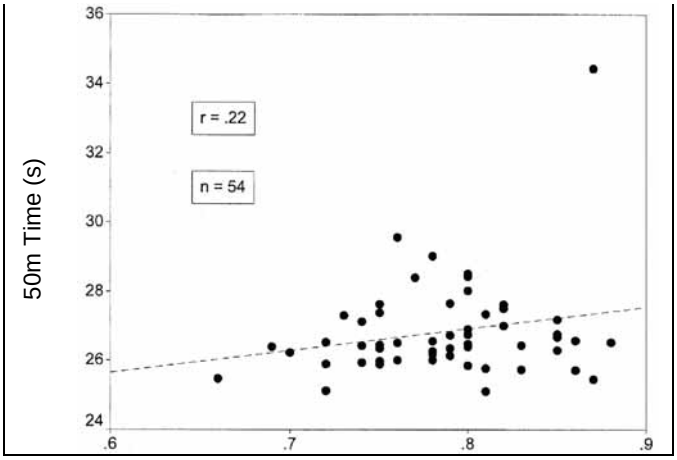


Figure 1 – Performance Time versus Block Time for 54 women in 1996 Olympic 50m Freestyle

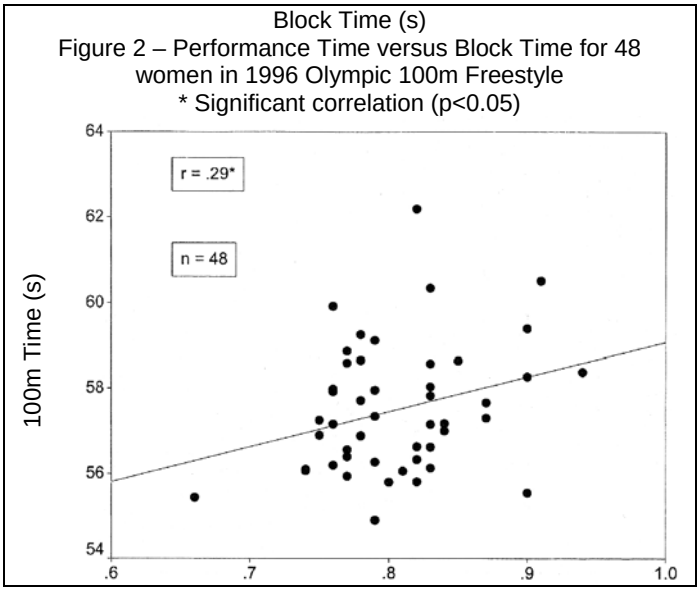


Figure 2 – Performance Time versus Block Time for 48 women in 1996 Olympic 100m Freestyle
* Significant correlation (p<0.05)

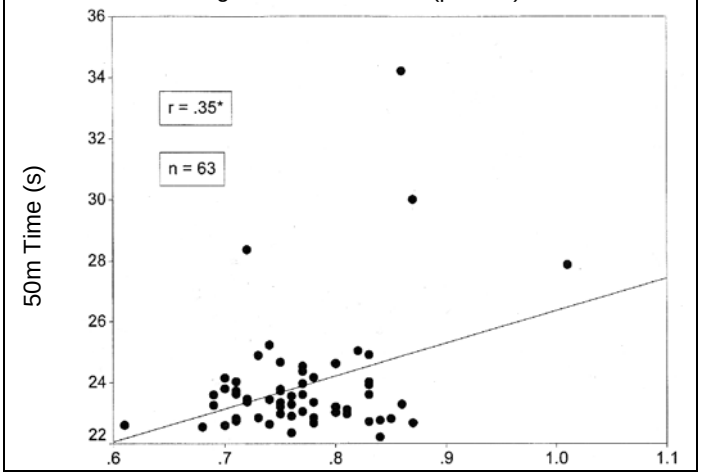
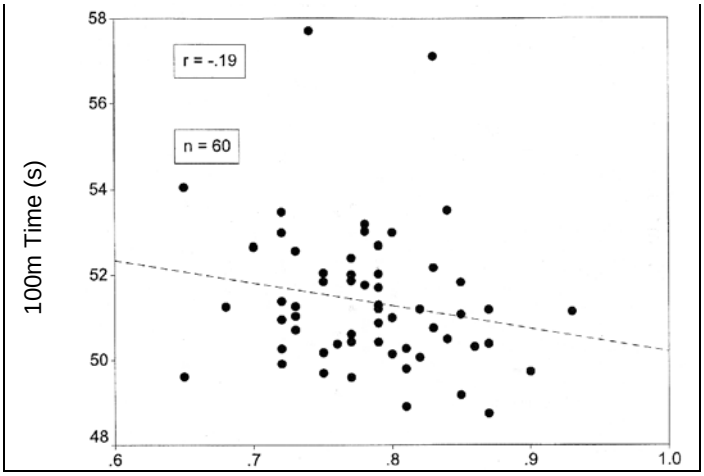


Figure 3 – Performance Time versus Block Time for 63 men in 1996 Olympic 50m Freestyle
* Significant correlation (p<0.05)

Figure 4 – Performance Time versus Block Time for 60 men in 1996 Olympic 100m Freestyle



DISCUSSION

The block times for men and women swimmers in the 1996 Olympic Games are similar to the range of block times found in previous studies (2, 4, 9, 10, 16, 18, 22, 26). Likewise, the absence of a difference in block time between men and women is consistent with previous findings (16, 22).

The correlations between event time and BT are much lower than those found by Arellano et al (1) for time to 10 metres and event time at the 1992 Olympic 50 and 100m Freestyle events. In fact, the coefficient of determination for the largest correlation (r=0.35 for the men's 50m Freestyle) is only 0.12, meaning that only 12% of the variability in performance time for the 50m Freestyle is determined by BT. Therefore, 88% of the variability in the 50 Freestyle times can be attributed to other factors, such as takeoff speed, flight time/distance, and swimming speed. The low correlation between BT and event time should be viewed in relation to the proportion of total performance time accounted for by the start. In the men's 50 m Freestyle, for example, BT was only 3.2% of the total time. Therefore, an action that lasted only 3.2% of the event determined 12% of the variability. From this perspective the start takes on much more importance. Clearly, for longer events the start is a smaller percentage of total time. In the women's 100 Freestyle, for example, the correlation of r=0.29 determined 8% of the variability, but the start constituted only 1.4% of the total performance time.

It must be noted that a group of Olympic athletes cannot be considered a random sample of all swimmers. Nevertheless, it is clear from the scatter plots (Figures 1-4) that several competitors were considerably slower than the mean of the group. Removing performance times slower than 30 seconds from the women's 50m Freestyle does not affect the correlation, but removing the four performances slower than 28 seconds from the men's 50m Freestyle changes the correlation to r=0.04, no longer significant. Removing the two performance times slower than 57 seconds in the men's 100 Freestyle yields a significant correlation of r=-0.26. This surprising result suggests that swimmers who were the slowest off the blocks had the fastest performance times! In fact, the slowest swimmer off the blocks in the 100 Freestyle final (Popov, 0.88 s) won the race! Clearly this is contrary to the beliefs of most coaches and swimmers, and suggests that perhaps the start is not as crucial a factor in performance as expected.

It may be concluded that at this level, the start does not assume more importance in determining performance because the swimmers are elite and the variance in block time is small. There may be more important factors than block time that determine who wins and who loses. These factors might include strength, power, technique, and mental strategy.

The difference between men and women in block time was very small, only 0.02 second. The difference in performance time, however, was much greater, 2.94 seconds in the 50 Freestyle and 6.12 seconds in the 100 Freestyle. In general, male swimmers have more muscle mass and are stronger than female swimmers. The observed differences in performance times are probably a result of greater strength in the men. The women were 12.3% slower in the 50 Freestyle and 11.9% slower in the 100 Freestyle but only 2.6% slower off the blocks. This suggests that strength may be less important in getting off the block fast, than it is in the water. Reacting quickly to the start signal and correct starting technique may be more important than strength in reducing block time.

When the anthropometry of swimmers was considered, several studies have found significant correlations between body size and swim start performance measures. Disch et al (7) found that reaction time was correlated with weight (r=0.54), height (r=0.37), and reach (r=0.37) and flight time to 10 feet was correlated to height (r=-0.45) and reach (r=-0.53) in 30 untrained college women taught to perform a swimming start. These relationships accounted for 26-37% of the variance in start performance, the rest being attributed to such factors as leg strength, power, and technique. Height was also found to be important in determining the final time of Olympic swimmers, accounting for 25-56% of the variability at the Barcelona Games (I). On the other hand, Zatsiorsky (26) found that block time was not correlated with body size or the jumping ability of the swimmer.

It has been suggested that a longer block time may be advantageous for gaining distance off the block, in that the swimmer has more time to apply force with the legs (8, 18). Havriluk (11) states that "*As predicted by the impulse-momentum equation, a longer block time could result in a higher takeoff velocity and ultimately a shorter time to a distance that represented an adequate criterion measure*". Nevertheless, Kollias (16) found no relationship between flight time and block time.

There are other factors besides block time and flight time that influence the success of a start. The "hole" entry, entering through a small hole in the water as opposed to flat, reduces form drag and has been shown to produce faster times to a given distance than the flat entry (25). The glide has also been shown to be an important phase of a fast start (15).

It is clear that a standard method for comparing starts should be adopted by swimming researchers. Reaction time, movement time, block time, flight time, takeoff velocity, and glide angle have been used with varying degrees of success. The most successful approach has been to record the duration from the start signal to a fixed distance, but this distance has not been standardised. Distances of eight feet (17), 12 feet (18), 5 metres (3), 5.5 metres (26), 8 metres (18, 15), 10 yards (5), 20 feet (19), 25 feet (9), and 30 feet (18) have been used in studies to date. Likewise, there is no agreement on which part of the body should be used to determine distance from the end of the pool: feet, hips, head, or hands. Havriluk (11) has suggested that 9.7 metres is a "*defensible criterion measure for the swimming start*" because this distance was one metre past the point where all members of the sample tested surfaced from the dive (30 men high school and college swimmers). The crown of the head was used to determine distance from the end of the pool. Arellano (1) found very high correlations between start time to 10 metres and event time at the 1992 Olympics in Barcelona. The time for the head to reach a distance of 10 metres should be adopted for future research on swimming starts.

In summary, men and women in the 1996 Olympic 50 and 100m Freestyle events did not differ in block time. Swimmers in the 50m Freestyle were not faster off the blocks than swimmers in the 100m Freestyle. The correlations between block time and total performance time were weak and their interpretation is equivocal. It therefore appears that at the elite Olympic level, the start plays a minor role in deciding the winner of sprint races.

APPLICATIONS

Based on data obtained from the 1996 Olympic 50 and 100m Freestyle events, elite sprint swimmers, both men and women, leave the starting blocks in approximately 0.78 seconds after the start signal. Coaches can use this time as a standard against which to compare their own swimmers. However, for elite level swimmers, the time it takes to leave the starting block is not highly correlated with performance time for the entire event. Therefore, to improve start performance, coaches should place more emphasis on reducing the time to reach 10 metres than trying to lower block time by hundredths of a second.

It is suggested that the time for the crown of the head to reach a distance of 10 metres from the end of the pool be used to measure start time in future research on the swim start.

NOTE

Block time and performance time for the men's and women's 50 and 100m Freestyle events at the 9th FINA World Swimming Championships held in Fukuoka, Japan were obtained from the FINA Web Site (www.fina.org/fukuoka_SwimmingResults).

For comparison with the 1996 Olympic data, men who were slower than 28 seconds in the 50 or one minute in the 100 were eliminated from the analysis. Women slower than 30 seconds in the 50 or 1:05 in the 100 were eliminated.

Block time did not differ between the Olympics in 1996 and the WorId Championships in 2001, for either sex or event. In 2001, men were faster off the blocks in the 100m Freestyle than women. Block time was correlated with performance time in the 50m Freestyle for both men and women.

ACKNOWLEDGMENTS

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SOURCES OF FUN & MOTIVATION IN AGE GROUP SWIMMERS

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The purpose of this article is to provide specific strategies to help motivate young swimmers. The psychological component of performance often touted as important; however specific strategies to address the psychological and emotional components of swimming are not scientifically examined. This article surveys and analyses one of the main motivators for participating in swimming by describing specific factors that swimmers describe as fun and non-fun. Coaches can use this information to design season plans and practice plans that will enhance the swimming experience for Age Group swimmers.

Abstract

This investigation had three purposes...

1. To determine specific sources of fun and non-fun in Age Group swimmers
2. To identify factors influencing perceived fun and non-fun sources of the swimmers
3. To explore how achievement motivational goal orientations are related to overall levels of swimming enjoyment and specific fun and non-fun sources

Participants were youth swimmers taking part USA Swimming Age Group programs throughout the continental United States. Stratified by geographical location, gender, and age, 600 surveys and parental consent forms were randomly mailed to participants ... 277 completed surveys were returned (46%), with swimmers ranging in age from 7-19 with a mean age of 13.03 years. Descriptive statistics

revealed that "being with my friends" and "when coaches compliment and encourage me" were the items rated as the most important fun components. The most important sources of non-fun included "getting slower times than my goals" and "getting lapped in races". Responses to fun and non-fun sources were found to differ based on gender, age, future participation, perceived ability, and stress. The achievement goal orientations of the young athletes were also found to influence fun and non-fun sources. Implications for improving motivation are discussed.

In a recent USA Swimming study of motivation in youth participants (16), fun was identified as a major factor contributing to continued involvement and motivation to swim. Conversely, not having fun contributed to the cessation of organised swimming involvement. However, while athlete fun ratings discriminated between active swimmers and swimming dropouts, the study was not designed to determine what specifically was and was not fun for Age Group swimmers. Moreover, when the first study's results were presented to USA Swimming coaches, they indicated that identifying what makes swimming fun was a major factor of importance and a high priority research question. This study is designed to respond to this need and focus on the specific factors in swimming that children perceive as fun and not fun.

For the purposes of this manuscript, fun is defined as a general positive feeling and cognitive state that is more specific than affect or mood, but more general than a specific emotion (11; 22). Sometimes fun is confused with intrinsic motivation. While fun is different from intrinsic motivation, it is certainly a component of motivating young athletes (9). This research will identify the impact fun and non-fun factors have on a swimmer's participation motivation.

Not only are fun and enjoyment major factors in swimming participation, but youth participation in sport in general (22). The enjoyment that a young athlete feels is related to positive team interactions and support, effort and mastery of a sport skill, positive coach support and satisfaction with season performance (13), as well as the amount and type of parental involvement (18). Based on the body of sport enjoyment literature, Scanlan and her colleagues (14) describe sport enjoyment as a major predictor of motivation in their sport commitment model.

In the youth sport literature, there are several factors that influence a child's participation motivation. General participation motives include achievement, team atmosphere, fitness, skill development, friendship, and fun. In a recent literature review, it is clear that fun is a major reason for participation. Kim (9) concludes, "Lack of enjoyment is a particularly important predictor of withdrawal from sport" (p.25). Therefore, he indicates that it is important to understand the specific components of fun that may relate to young athletes' decisions to drop out or stay in a sport. Based on this literature, a major purpose of this study was to identify specific sources of fun as perceived by age group swimmers. It was also deemed important to examine components of swimming that were non-fun; as these have not been previously examined in the youth sport literature.

Previous studies (21;12) have shown that a variety of background factors, such as gender and age, influence fun. However, few consistent findings have emerged as to how they impact fun. So, not only is there a need to examine specific sources of fun and non-fun in youth swimming, but demographic factors, such as gender and age, need to be re-examined.

Besides these demographic factors, sport psychology research suggests that a number of personality orientations or dispositions might influence a young athlete's sport enjoyment. One factor of particular importance is the young athlete's motivational goal orientation (a disposition where a child adopts predominantly task or ego goals) (15). Goal orientation theory states that there are two basic perspectives or dispositions that people have in varying degrees when they are in achievement situations. One perspective is task orientation, where a performer focuses on judging success based on personal, self-referenced comparison with themselves … e.g. Did my times get better? Has my stroke improved? The other perspective is ego goal orientation, where a performer focuses on judging success based on a direct comparison … e.g. beating an opponent in a sprint) (23). Goal orientation researchers such as Nicholls (10) and Duda (7) predict that task and ego goal orientations are related to perceptions of ability, enjoyment, stress, and commitment/involvement in sport. Specifically, predominately task oriented swimmers are expected to most enjoy self-referenced fun sources such as skill or fitness improvement; while ego oriented swimmers most enjoy beating others in races.

The motivational goal orientation theory was especially relevant to use in this study for several reasons. First, it has been the dominant theoretical explanation used for studying athlete motivation for over a decade, having been shown to predict both athlete performance

and motivation (4). Second, in the sport of swimming emphasis can be easily placed on improving relative to one's own ability … e.g. decreasing time … or judging ability in reference to others … e.g. winning/placing. It would help coaches to know which of these orientations facilitate swimmer fun and motivation. In fact, several researchers (16,25) have found that creating specific motivational climates by stressing task or ego goals can influences athlete motivation.

Based on the motivational goal theory tenant that only one child can actually win a contest, but all can improve relative to their own ability, it is predicted that those swimmers who adopt a task rather than an ego orientation will experience greater enjoyment. It was also hypothesised that motivational goal orientations would be related to a child's perception of enjoyment and specific factors that are fun and non-fun. Specifically, it was predicted that fun sources that are outcome oriented and social evaluation … e.g. winning … would be rated as more important by swimmers with low task and high ego goal orientations. Whereas, fun sources that focus on the enjoyment of the swimming process … e.g. trying to improve … would be rated as more important by swimmers with high task and low ego goal orientations.

METHODOLOGY

Participants

Participants were youth swimmers taking part in USA Swimming (USAS) Age Group programs throughout the continental United States. Since USA Swimming initiated and funded this study, only swimmers who were part of their network organisation were contacted. In an effort to ensure that the results would be representative of USA Swimming programs from around the country 600 surveys and parental consent forms were randomly mailed to member swimmers, equally stratified by geographical location, gender, and age group classification. To insure the highest possible return rate, USA Swimming merchandise prizes were offered via a lottery to a selected number of participants who returned completed surveys. In addition, if the survey was not returned within five weeks after the initial mailing, a reminder postcard was sent, and finally, if there was no response to the reminder postcard, the survey was re-mailed four weeks after the reminder card. Two hundred and seventy-six completed surveys were returned (46%). A total of 123 males (44%) and 154 females (56%) completed the surveys. They ranged in age from 7-19 with a mean age of 13.03 years (*SD*=2.63). Fifty-five athletes were in the following four USAS age group categories … 7-10 age group (26 males, 29 females), 71 into the 11-12 age group (29 males, 42 females), 88 into the 13-14 age group (41 males, 47 females), and 62 into the 15-19 age group (26 males, 36 females). Male and female years of swimming experience were identical with a mean of 5.4 years (*SD*=2.89) of swimming experience. Finally, 235 swimmers indicated that they planned to continue swimming, while 11 indicated they would not continue swimming, and 29 were undecided.

Swimming Fun Survey

A swimming fun survey was developed for use in this investigation[1]. This survey was comprised of four parts described below.

Swimmer background information. A series of demographic and background questions … e.g. age, gender, years experience … were included in this portion of the questionnaire, as well as 5-point Likert scales assessing global swimming enjoyment (1=not at all, 3=average, 5=very much), perceived stress of swimming (1=not at all, 3=average, 5=very stressful), and swimming ability (1=not good, 3=average, 5=very good). The swimmers were also asked if they planned to continue swimming next year (yes, no, not sure). Single items were utilised to measure these constructs due to the wide range in ages of the swimmers and the need to keep the survey reasonable in length.

What is fun about swimming? Participants were asked to rate how much they agreed with 41 swimming fun items … e.g. I like the challenge, I like being with friends … on 5-point Likert scales with anchors 1="Not true for me", 3="Sort of true for me", and 5="Really true for me". Ten of these items came from the existing youth sport enjoyment questionnaire of Wankel and Kreisal (19). Additional items were identified in open-ended interviews of 48 Age Group swimmers conducted by the authors. These interviews identified unique items specific to swimming such as "*my relay team really comes together*" or "*trying to improve my times*". It was felt that these items were important to include, as they would provide more specific information for coaches and parents, as compared to the more global Wankel and Kreisal items.

What is not fun about swimming? Participants were asked to rate how much they felt 16 items related to not enjoying swimming … e.g. I do not like getting slower times than my coach says, I do not like wearing a skimpy swim suit … on 5-point Likert scales with anchors 1="Not true for me", 3="Sort of true for me", and

[1] The questionnaire used in this study is available upon request from the first author.

5="Really true for me". These items came from open-ended interviews of 48 age group swimmers conducted by the authors.

Task and Ego Orientation in Sport Questionnaire (TEOSQ)

Part 4 of the questionnaire was only completed by swimmers 13 years and older (n=150) and consisted of the TEOSQ (5)[2]. The TEOSQ consists of 13 questions that measure goal orientations, with six items loading on Task Orientation and seven items loading on Ego Orientation. These items were verified using confirmatory factor analysis. The TEOSQ scales have been found to be internally consistent (3). In the present study, the internal consistency for the Task and Ego subscales were consistent with earlier tests of the measure (Cronbach alpha for task = .84 and for ego = .85) (3).

FINDINGS

Predictor Variables

Several items were used as predictor variables in the analyses. These variables were assessed on 5-point Likert scales that ranged from 1="not at all" to 5="very much/good". These predictor items included the following: perceived enjoyment of swimming, perceived stress of swimming, and perceived ability at swimming.

There were two predictor variables that were created from other items on the survey. These included total swimming involvement and plans to continue swimming. Total involvement was determined by multiplying total years swimming, the number of months out of the year that each participant swam, the number of days per week spent swimming, and the number of minutes of each practice. The raw involvement score was divided by 100 to make it more manageable. Due to the high number of swimmers who plan to continue, the variable that described plans to continue was collapsed into two responses instead of three. When asked if they would continue swimming, the swimmers responded with a "yes", "no", or "I am not sure". The "no" and "I am not sure" items were put into one group of "no/not sure". Combining the responses like this was done due to the inequity in respondents who were continuing and those that were not. This change also allowed us to review the results with a preventative tone because the athletes in the category of "no/not sure" are in danger of dropping out of swimming. Total sample means for these variables can be seen in Table 1.

Sources of Fun and Non-Fun

The total sample means were calculated for each of the 41 fun item ratings and were rank ordered to determine the most important fun items that were associated with being involved in swimming (see Table 2). The top five items included being with friends, being complimented and encouraged by the coach, being known as a good swimmer, winning races, and getting in shape (tied with varied workouts and when my relay team comes together).

Table 1
Mean Responses of Participants by Age Group

	Age Groups 7-10	11-12	13-14	15-19	Total
Overall Swim Enjoyment	4.5(0.7)	4.4(0.8)	4.3(0.8)	4.2(0.9)	4.3(0.8)
Perceived Stress	2.0(1.0)	2.5(1.1)	2.9(1.0)	3.4(1.0)	2.7(1.1)
Perceived Ability	4.0(0.8)	4.0(0.8)	3.8(0.8)	3.9(0.9)	3.9(0.8)
Years Experience	3.4(1.4)	4.5(1.8)	5.4(2.4)	8.4(3.2)	5.4(2.9)
Days/Week of Practice	4.1(0.9)	4.4(1.0)	4.9(1.0)	5.5(0.7)	4.8(1.1)
Minutes/Day of Practice	79(20)	107(35)	133(46)	143(57)	118(48)
Month/Year of Practice	9.9(2.5)	10.3(2.0)	10.8(1.6)	10.2(2.4)	10.3(2.2)
Total Involvement Index	117.7(90)	243.8(196)	423.4(346)	683.2(418)	368(354)

Table 2
Top 15 Ranking of Reported Fun Sources in Age Group Swimming

Rating M	SD	Fun Sources
4.74	.68	Being with my friends
4.73	.62	When coaches compliment and encourage me
4.72	.60	To be known as a good swimmer
4.71	.68	Winning races
4.68	.69	Getting in shape
4.68	.71	When the workouts are varied - not just the same everyday
4.68	.73	Relays where my team really comes together
4.65	.67	Feelings of accomplishment
4.65	.76	Team cheering for each other and the team coming together
4.62	.69	Trying to improve my times
4.62	.77	Being on a team
4.56	.82	When we have fun time and not just swim laps
4.55	.80	Relays
4.51	.82	When my parents support, cheer and encourage me
4.48	.94	When we have relays in practice

- A rating of 5 equals "really true for me".
- For a full listing of the fun items, please contact the authors.

The items at the bottom of the fun list included advice from parents, comparing skills against others, being able to talk to coach about anything, hard work, and dry land training. It is important to note that none of the items reflecting swimming fun sources were rated below three on a five point scale, in fact, most of the items had a mean score of four or higher, showing that these participants found the swimming sources assessed to be fun.

Responses to the items that reflected things that young swimmers might not like about swimming were rank ordered by mean scores (see Table 3). The five items that were ranked as most relevant and least liked about swimming included getting slower times than a swimmer's goals, getting lapped in races, when other swimmers skip laps, when the coach yells or threatens, and swimmers who think they are good just because they are fast. Having too many meets did not seem to be a major factor

for swimming not being fun for this sample of swimmers.

Table 3
Top 12 Ranking of Reported Non-fun Sources for Age Group Swimming

Rating M	SD	Non-fun sources
4.41	.89	Getting slower times than my goals
4.28	1.17	Getting lapped in races
4.12	1.19	When other swimmers skip laps or get in front of me in practice
4.10	1.32	When my coach yells at or threatens me
4.07	1.21	Swimmers who think they are good just because they are faster
4.01	1.20	When parents keep asking about bad races
4.01	1.24	When parents brag about only their swimmer
4.00	1.20	Getting beat by people I used to beat
3.98	1.25	When I have no time for other things like school, friends, shop
3.94	1.32	Being stuck in a lane with slower swimmers
3.41	1.47	Screaming/Yelling parents
2.79	1.47	When parents make you go to practice

- A rating of 5 equals "really true for me".
- For a full listing of the non-fun items, please contact the authors.

Fun Source Discriminant Analysis

Harmonic means were calculated for the fun items that had fewer than six missing responses, so that the discriminant analyses would have more power. The criteria for using harmonic mean calculations on missing item data was that less than 3% of the sample was missing for an item. Exploratory factor analyses of the fun items using both orthogonal and oblique rotations were conducted to determine if there were groupings of similar "fun" sources. However, these analyses failed to find clear factors, so the fun items were examined separately.

In order to determine how ratings on the fun items might be influenced by swimmers in different groups, discriminant function analyses followed by univariate analysis were completed using gender, age groups, plans to continue, perceived ability, perceived stress of swimming, and swimming involvement as discriminating variables. If the overall discriminant function was significant, the contribution of specific fun items to the overall significant discriminant functions was carried out as follows. The items judged to have displayed the strongest discriminating power had both a relatively high standardized discriminant coefficient and a significant univariate F score. Items that only displayed relatively high standardised discriminant scores were judged as important, but not as important as those with both high standardized discriminant function coefficients and significant univariate mean differences.

Gender differences. Gender was a discriminating factor for the 41 fun items in swimming, Wilk's Lambda = 0.72, $p<0.001$ (see Table 4). An inspection of those items with high standardised discriminant coefficient scores and significant univariate analysis indicated that females found rewards and medals, having a coach tell them what they need to improve on, and the excitement of winning to be more important fun sources than for the males. High discriminant coefficient results also suggested that males found winning races, competing with friends, and having parents give them advice to be more important sources of fun than females.

Table 4
Gender Discriminant Fun Sources Analysis

Variable	t-test p	Standardised Discriminant Coefficient	Fun Source Rating Mean Male	Female
Coach telling me what to improve on	0.001	0.47	4.28	4.62
Getting rewards/medals	0.05	0.49	4.19	4.44
Excitement of Swimming	0.05	0.47	4.16	4.53
Winning races		0.47	4.78	4.64
Competing with friends		-0.45	3.97	3.72
When parents give me advice		0.41	3.23	3.08

The discriminant function analysis reached significance, Wilk's Lambda = 0.72 $X^2(41)=79.5$ p(0.001)

Age differences. The age of swimmer fun items discriminant analysis was significant, Wilk's Lambda = 0.36,$p<0.001$. Furthermore, an inspection of the standardised discriminant coefficients and significant univariate analysis results (receiving rewards discriminant coefficient = 0.70, $p<.001$, team cheering discriminant coefficient = 0.42) indicated that receiving rewards and medals is a more important source of fun for younger swimmers and that its importance decreases for older swimmers (Age 7-10 M=4.86; age 13-14 M=4.7; age 13-14 M=4.33; age 15-19 M=3.48). While not as strong a factor, based on comparison of standardised discriminant coefficient scores, it appears that having teammates cheer each other on is a very important source of fun for the youngest age groups (age 7-10 M=4.53; age 11-12 M=4.69), which decreases in importance for the 13-14 year old age group (M=4.53), and then regains its importance in later adolescence (age 15-19 M=4.70).

Plans to continue swimming. The decision to continue with swimming was found to discriminate the 41 fun items, Wilk's Lambda = 0.57, $p<0.001$. While there was a large disparity between the cell sizes (235 continuing and 40 not sure or not continuing), it is of note that the participants in the not continuing group doubled in size after a second, follow-up, mailing of surveys was sent.

All of the fun item ratings that were found to be significantly related to remaining involved in swimming, based on standardised discriminant coefficient scores and significant univariate F-scores, were rated as more important for the participants who had decided to continue their swimming involvement (see Table 5). Specifically, the fun items involved were related to the swimmers' relationship with the coach and enjoying the skills needed to improve their swimming.

Table 5
Plans to continue Discriminant Fun Sources Analysis

Variable	t-test p	Standardised Discriminant Coefficient	Fun Source Rating Mean Plans to continue	
			Yes	No/Not Sure
Relays	0.001	0.35	4.60	4.29
Trying to improve times	0.001	0.33	4.73	3.89
Excitement of swimming	0.001	0.31	4.53	3.42
Improve skills	0.001	0.31	4.45	3.47
I can talk to coach about anything	0.05	0.34	3.75	3.08
My coach knows me as a person		0.44	4.20	3.90

The discriminant function analysis reached significance, Wilk's Lambda = 0.57,X^2(41) =134.34, p(0.001)

Perceived stress of swimming. Perceived stress of swimming was not found to be a discriminating variable for swimming fun items, Wilk's Lambda = .65, p>0.05).

Perceived ability. Perceived swimming ability was determined by a 5-point Likert Scale that required the swimmers to compare their swimming ability to that of other swimmers in their Age Group from poor to very good. Due to the number of responses, Poor, Below Average, and Average responses were grouped together for the discriminant analysis. Discriminant analysis results using the three levels of swimming ability as the discriminating factor and the fun items as the dependent variables were significant, Wilk's Lambda =0.62, p<0.01 (see Table 6). Inspection of the standardised discriminant coefficient and univariate analysis results indicated a general trend that swimming tended to be more fun for swimmers with higher perceived ability. Specifically, the most significant of these items were the challenge and the excitement of swimming. With higher perceived ability swimmers rating these as more fun. The exception to this trend was that having the team cheer for each other and coming together as a team, while important for all levels of perceived ability, was more important for swimmers with lower perceived ability.

Table 6
Perceived Ability Discriminant Fun Sources Analysis

Variable	t-test p	Standardised Discriminant Coefficient	Fun Source Rating Mean Perceived Ability		
			Poor-Avg	Above Avg	Very Good
The challenge	0.001	0.39	4.00	4.30	4.57
Excitement of swimming	0.001	0.31	4.12	4.35	4.71
Team cheering for each other and coming together		0.59	4.72	4.66	4.55
When my coach tells me what I must improve on		-0.56	4.51	4.42	4.50
My coach knows me as a person		0.47	3.91	4.23	4.31
Knowing that my parents are at my meets		0.41	4.31	4.23	4.49
Travelling to new places		0.40	4.28	4.45	4.63
Being on a team		0.33	4.59	4.56	4.80

The discriminant function analysis reached significance, Wilk's Lambda = 0.62, X^2(82) = 113.44, p(0.01)

Non-Fun Source Discriminant Analysis

Harmonic means were calculated for the non-fun items using the same criteria as the fun items. Exploratory factor analyses of the non-fun items failed to display conceptually sound factors, so the non-fun items were examined separately.

As was the case with the fun item results, discriminant function analyses followed by univariate analysis were conducted using gender, age groups, plans to continue, perceived ability, perceived stress of swimming, and swimming involvement as discriminating variables and the non-fun item ratings as the dependent variable.

Gender. Gender was not found to significantly discriminate between the groups, Wilk's Lambda = .93, p>0.05.

Age. Age was a discriminating factor for items that were considered not to be fun in swimming, Wilk's Lambda = 0.75, p<0.005. Standardised discriminant coefficients and univariate analysis (see Table 7) indicated that younger swimmers found being stuck in the slow lane a major source of non-fun feelings in swimming. This feeling decreased progressively in the later age groups. Another, similar, trend was the dislike for not having an off-season. While, in absolute terms this was not a major factor, all scores were below 2 *(M* = 1.70, 1.58, 1.57, and 1.17 from youngest to oldest age group), this was more of a factor for younger swimmers than older swimmers in not enjoying swimming.

Table 7
Age Discriminant Non-Fun Sources Analysis

Variable	t-test p	Standardised Discriminant Coefficient	Fun Source Rating Mean Age			
			7-10	11-12	13-14	15-19
Stuck in lane with slow swimmers	0.001	0.61	4.46	4.22	4.10	3.48
Dislike no off-season	0.001	0.54	1.70	1.58	1.57	*r* 1.17
Getting lapped in races		-0.49	2.37	2.75	2.83	3.08

The discriminant function analysis reach significance, Wilk's Lambda = 0.75, X^2 (48) = 76.9, p(0.005)

Another source of not enjoying swimming that demonstrated differences in responses based on age was being lapped in races. This was less important for young swimmers and became a larger factor for not enjoying swimming for the older swimmers.

Plans to continue swimming. The decision to continue with swimming was a discriminating category for non-fun items in swimming, Wilk's Lambda = 0.84, p<0.001. Standardised discriminant coefficient (0.69) and univariate analysis *(p*<.001) indicated that swimmers skipping laps or getting in front of the swimmer was a more significant source of displeasure for swimmers who were not sure or were not continuing in competitive swimming *(M*=4.05),

as compared to swimmers who planned to continue *(M*=2.59).

Perceived stress of swimming. The stress of swimming was found to discriminate between the two groups based on non-fun item ratings, Wilk's Lambda = 0.75, $p<0.001$. An inspection of the standardised discriminant coefficient and univariate analysis revealed that higher levels of perceived stress of swimming concerning swimming were significantly related to the relevance of two non-fun items. Specifically, getting beat by people that a swimmer used to beat (discriminant coefficient = 0.57, $p<.001$) and wearing skimpy suits (discriminant coefficient = 0.33, $p<.001$) were rated as more relevant to not enjoying swimming for high stress swimmers than for low stress swimmers. (Getting beat low stress *M*=3.5, average stress *M* = 4.22, high stress *M*=4.39; Skimpy suit low stress *M*=2.73, average stress *M*=2.90, high stress *M*=3.28).

Perceived ability. Perceived ability was a discriminating category for non-fun items in swimming, Wilk's Lambda = 0.82, $p<0.001$. Standardised discriminant coefficient and univariate analysis (see Table 8) indicated that several non-fun items were more important for swimmers with low perceived ability and this relevance increased with a swimmers' perceived ability. Specifically, 'parents bragging about their child's swimming' and 'getting slower times than their goals' became more of a factor as swimmers' perception of ability increased.

Table 8
Perceived Ability Discriminant Non-Fun Sources Analysis

Variable	t-test p	Standardised Discriminant Coefficient	Fun Source Rating Mean		
			Perceived Ability		
			Poor-Avg	Above Avg	Very Good
Getting beat by people I used to beat	0.001	0.54	4.09	4.18	3.49
Stuck in lane with slow swimmers	0.05	0.43	4.24	4.12	3.74
Screaming/Yelling parents	0.05	0.39	2.07	2.03	1.60
Swimmers who think they are good just because they are fast	0.05	0.31	4.20	4.22	3.76
Getting slower times than my goals		-0.37	4.26	4.43	4.56
When parents brag about their swimmer		-0.36	3.85	3.89	4.13
No time for other things		0.33	4.34	4.36	4.08

The discriminant function analysis reached significance, Wilk's Lambda = 0.82, X^2 (32) = 52.31, p(0.001)

Screaming and yelling parents and swimmers who think they are good just because they are fast were non-fun items that were rated as more important for low perceived ability swimmers than high perceived ability swimmers.

Motivational Goal Orientation Analysis

Goal orientation researchers such as Nicholls (10) and Duda (6) predict that task and ego goal orientations are related to perceptions of ability, enjoyment, stress and commitment/involvement in sport. Although much of the goal orientation research has focused on simply examining the task and ego orientations' main and interaction effects, the theoretical work of Nicholls (10) emphasised the importance of the interaction effects of three factors - task goal orientation, ego orientation, and perceived ability. That is, task and ego orientation differences should be maximised in low versus high perceived ability athletes since theoretical predictions are expected to be accentuated in low perceived ability individuals. For this reason, separate 2x2x3 way (task goal orientation by ego orientation by perceived ability) ANOVAs were conducted using enjoyment, perceived stress of swimming, and commitment/involvement as dependent variables. Task and ego goal orientation scores for the swimmers over the age of 13 were divided into high and low categories based on median splits[2] (Ego = 3.0 and Task = 4.5). Finally, 2x2 (task and ego goal orientations) MANOVAs were conducted on the fun and non-fun items to determine if specific enjoyment sources were effected by those goal orientations. Unfortunately, for the fun and non-fun item analysis full 2x2x3 MANOVAs could not be conducted because of difficulties filling all cells with adequate numbers of participants.

Perceived ability was organised into three categories. Category 1 was composed of all the swimmers who rated themselves as average or below ("1-3" on a Likert Scale) *(n*=86). Category 2 was all of the swimmers who rated themselves as above average (a rating of "4" on a Likert Scale) *(n*=121). Category 3 was composed of all the swimmers who rated themselves as very good ("5" on a Likert Scale) *(n*=70).

Enjoyment analysis. Swimmers rated their overall enjoyment using a 5-point Likert scale, with 1 signifying low enjoyment and 5 signifying very high enjoyment. The 2x2x3 ANOVA indicated a significant task goal orientation main effect *(F* (1,132) = 10.31, $p<.002$) with the enjoyment levels of high task swimmers *(M*=4.44) rated higher than the enjoyment ratings of low task swimmers *(M*=3.97). There was also a significant perceived ability main effect *(F* (2,132) = 5.29, $p<.05$). Post hoc Tukey

[2] Only swimmers in the 13-14 and 15-18 age groups were asked to complete the TEOSQ used in the goal orientation analyses because the scale had not been validated for younger age groups.

analysis indicated that all three groups significantly differed ($p<.05$) with enjoyment being higher for higher levels of perceived ability (M_1=3.9, M_2=4.26, M_3= 4.57).

Perceived stress of swimming analysis. Swimmers rated their perceived stress of swimming using a 5-point Likert scale, with 1 signifying low enjoyment and 5 signifying very high enjoyment. The 2x2x3 ANOVA indicated a significant task goal orientation main effect (F (1, 132) = 6.27, $p<.05$), with the perceived stress of swimming of high task swimmers (M=2.82) lower than the perceived stress of low task swimmers (M=3.26). There were no other significant effects or interactions.

Involvement analysis. There was no significant effect of task goal orientation, ego goal orientation, or perceived ability on total involvement in swimming ($p>.05$).

Fun item analysis. A task by ego goal orientation (2x2) MANOVA was conducted on the fun items. The 2x2 MANOVA results revealed a significant task goal orientation main effect (F (41,93) = 1.04, $p<.001$) and a significant ego goal orientation main effect (F (41, 93) = .80, $p<.01$). Subsequent univariate and discriminant function analysis indicated that swimmers who had a high task goal orientation found more varied workouts (high task M=4.89; low task M=4.54), working hard (high task M=4.17; low task M=3.48), getting in shape (high task M=4.83; low task M=4.60), being on a team (high task M=4.66; low task M=4.43), parents giving advice (high task M=3.19; low task M=2.48), and liking swimming as more enjoyable (high task M=4.62; low task M=4.02) than the low task oriented swimmers. Based on the examination of the follow-up univariate analysis and standardised discriminant function coefficients, swimmers with high ego goal orientations had higher ratings for enjoying rewards and medals (high ego M=4.25; low ego M=3.59), winning races (high ego M=4.83; low ego M=4.32) and doing the skills needed for swimming (high ego M=3.87; low ego M=3.59). Swimmers with low ego goal orientations indicated that having the coach know the swimmer as a person was a greater source of enjoyment than for swimmers with high ego orientation (high ego M=3.69; low ego M=4.13). The interaction effect was not significant.

Non-fun item analysis. A task by ego goal orientation (2x2) MANOVA was conducted on the non-fun items. The 2x2 MANOVA results revealed a significant task goal orientation main effect (F (16, 125) = .29, $p<.01$) and a significant ego goal orientation main effect (F (16,125) = .34, $p<.001$). Subsequent univariate and discriminant function analysis indicated that swimmers who had a high task goal orientation did not like it when their parents made them go to practice (high task M=4.28; low task M=3.60), being stuck in the slow lane with slow swimmers (high task M=4.12; low task M=3.57), or when they made slower times than their goals (high task M=4.53; low task M=4.27). Swimmers with low task goal orientations found wearing the skimpy suit to be a major factor for not enjoying swimming (high task M=2.47; low task M=3.07). Based on the examination of the follow-up univariate analysis and standardised discriminant function swimmers with high ego goal orientations did not like having slower times than their goals (high ego M=4.63; low ego M=4.12), not having time for other activities (high ego M=4.61; low ego M=3.92), having so many meets (high ego M=4.20; low ego M=3.62), and having their coach yell or threaten them (high ego M=4.30; low ego M=3.49). The interaction effect was not significant.

DISCUSSION

The purpose of this exploratory study was threefold. The first purpose was to determine specific sources of fun and non-fun in Age Group swimmers. The second purpose was to determine specific factors influencing the perceived fun of Age Group swimmers. The third purpose of this study was to further explore how achievement goal orientations are related to overall levels of swimming enjoyment, participation, and specific fun and non-fun sources. This study furthers swimming participation information by focusing on specific factors of enjoyment in a single sport and how these factors relate to the theoretical constructs of Nicholls goal orientation theory (10).

Previous studies examining enjoyment in youth sport have found sport enjoyment to be influenced by such things as perceived competence, skill development, social reasons, competition, and health and fitness (2). This study (see Table 2) supported these findings with the top five reasons for enjoying swimming being related to social reasons (being with friends), perceived competence (being complimented by the coach and being known as a good swimmer), competitive reasons (winning), and health and fitness reasons (getting in shape) .

While most attention has been paid to fun sources in youth sport literature, less attention has been paid to non-fun factors. In discussing their participation motivation model, Gould and Petlichkoff (8) stated that it is *"imperative that youth sport leaders learn to recognise which aspect of their program are perceived by children to be most beneficial and which incur the*

greatest costs" (p.175). This study described specific situations (costs) that are not fun for young swimmers. Moreover, results indicated that non-fun sources were not always the opposite of fun factors (see Table 3). For example, not meeting personal goals (getting slower times than goals), coach factors (the coach yelling at the swimmer), and parental reasons (when parents keep asking about bad races and when parents brag about only their swimmer) were important non-fun sources. Coaches should be aware of specific fun and non-fun factors in swimming to better understand the specific cost-benefits of participation.

In addition, differences in the sources of fun and non-fun items were noted based on gender, age, future participation in age group swimming, perceived ability, and perceived stress of swimming. The major difference in the responses of males and females was that females found receiving rewards and medals to be more fun than males. Both genders enjoyed winning, but the focus was slightly different for males and females. Females found the excitement of winning to be important for enjoyment while males enjoyed the competition between friends and winning their races. Females also reported that they enjoyed getting specific feedback from their coach more than males. This is similar to gender difference findings reported by coaches of both male and female collegiate athletes, although it is important to note that there are more differences within genders than there are between genders (17).

Swimmers who were going to continue swimming were more likely to find swimming fun than swimmers who were planning on discontinuing. While this is not a surprising finding, it does underline the importance of understanding specific aspects of swimming involvement that are fun and non-fun for children. This is also important when combined with the information that swimming was rated as more fun for those swimmers with high perceived ability. Perceived ability also had an insulating effect for screaming and yelling parents and swimmers who think they are good just because they are fast. However, parents bragging about their swimmer and getting slower times than goals were found to be greater factors of not enjoying swimming for swimmers with high perceived ability. These findings support the importance of perceived ability in understanding motivation factors involved in youth sport (8).

The motivational orientation of the swimmer also appears to be influential in the perceptions of enjoyment and stress as well as specific reasons for enjoying and not enjoying swimming. Overall, swimmers with high task goal orientations, where their focus is on the process of task improvement and self-comparison, had higher levels of enjoyment with swimming than swimmers with low task goal orientation. This same pattern was seen for the swimmers with high perceived ability. Perceived stress from swimming was also lower for those swimmers with high task goal orientations. These findings are important for two reasons. First, the independence of task and ego goal orientations as orthogonal constructs is supported by the lack of interaction between task and ego on enjoyment and stress. Second, these findings reinforce the necessity for coaches to emphasise the importance of a task-oriented focus for young swimmers. Recently several researchers (16;25) have studied the importance of creating specific motivational climates for young athletes. This research supports the importance of training coaches on how to create task oriented goal orientations.

Motivational goal orientation did not appear to affect the total amount of involvement, measured by length of season and number of years of involvement, for the age group swimmers. This may have occurred due to our construction of the involvement variable, but it does help to confirm that individual goal orientation does not affect the level of involvement in sport. Athletes are involved in their sport regardless of their primary motivational goal orientation.

The specific fun and non-fun items that were preferred by high task oriented individuals are not surprising. High task swimmers preferred activities that were focused on the process of swimming such as working hard, getting in shape, having varied workouts, and generally liking swimming. Similarly predictable, the activities that were found to be most fun for swimmers with high ego goal orientation scores were outcome oriented such as enjoying rewards and medals. Swimmers with low ego scores tended to want the coach to know them as a person more than swimmers with high task or ego scores. This is not surprising since swimmers with low ego goal orientations may be participating more for social reasons and not outcome reasons.

APPLICATIONS

The results of this study have important implications for coaching. First, coaches need to emphasise process-oriented goals for swimmers. Many young swimmers are already focused on making comparisons with peers and external rewards. Based on the evidence in this study,

focusing on a child's task goal orientation and downplaying the outcome/reward focus of ego orientation, youth swimmers will be more likely to enjoy swimming and feel less stress from participation. For example, coaches may want to look for swimmers who display frustration with other swimmers who skip laps or get in front of them. This is one way of targeting specific athletes who are likely to drop out of swimming or who might benefit from a task focused view of training.

Second, the importance of perceived ability in swimming cannot be understated. Perceived ability influenced swimmer enjoyment and their decision to continue or discontinue swimming. This finding suggests that coaches must create scenarios where children can feel success and competence in their sport. This does not mean that coaches should give children a false sense of self-esteem. It does suggest a de-emphasis of inter-individual comparisons and an emphasis on intra-individual comparisons. It also suggests that coaches follow progressions that challenge children at the individual level. For example, when teaching sprints to younger children, have them keep track of the number of strokes they can hold their breath. The object is to be able to focus on beating their own records until they can go a full length.

The fun and non-fun items described in this research can be used to help develop effective (and fun) practices. Some of the non-fun activities, like wearing skimpy suits or having no off-season, are currently a reality of competition, but these items can be de-emphasised or counter balanced by focusing on activities, such as varying workouts or focusing on individual and team accomplishments, that are fun for young swimmers. Other non-fun issues, such as having the coach yell or threaten the swimmer, can (and should) be modified or eliminated. One way to do this is to have a volunteer videotape several practices and meets. Watch the videos to see how the young swimmers see you. This same technique could also be a way to eliminate the screaming and yelling parents that the swimmers reported as not fun.

The age differences in the things young swimmers report as being fun and not fun are also important to keep in mind when creating practices. Keep in mind that younger swimmers in the 10-and-under age group were more likely to rate receiving medals as fun than the older age groups. This does not mean that the older aged swimmers do not enjoy receiving awards and medals. It does mean that other forms of satisfaction are more important than external rewards. Cheering for teammates was also important for both the 11-12 year old age group and the 15-19 year old age group, while it is not as important for fun with the 7-10 year old and 13-14 year old swimmers. These specific fun factors become great strategies to refocus the energy and motivation of the swimmers that you work with.

Enjoyment in youth sport has been extensively studied, however the specific activities, such as having relays in practice, that make a sport like swimming enjoyable have not been examined. Most of the past research in youth sport enjoyment has been descriptive. It is time that we examine models with intervention studies. For example, researchers could train coaches to emphasise fun sources and measure patterns in participation, dropout, perceived stress, and perceived competence (1). By understanding specific reasons of swimming enjoyment, practitioners will be able to enhance the swimming experience for young athletes.

AUTHOR NOTES

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COOL-DOWN

Race Pace Preparation

By Peter Malone (5/9/02)
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INTRODUCTION

Peter Malone's Accomplishments

- Politically active
- Accomplishment in the water
- Guiding sport
- USA Swimming Board of Directors for eight years
- ASCA Board of Directors for four years
- Zone Director for eight years
- 34 years of coaching
- General Manager and Head Coach of Kansas City Blazers
- Seven years USA International Coaching Staff

Coach Malone's Opening Comments

- In awe of Mark Schubert's talk last night, they have had parallel paths in swimming
- Has great support from family and staff
- Humbled
- Coach Malone said that he is good at orchestrating and guiding people and that he is not good with anything involving computers
- Coach Malone does not want to get too involved in computer-end of coaching
- His approach is not a cookie-cutter approach – his program is not to be copied – he has no handouts
- Coach Malone does not see himself as an innovator – his program is a complex of everything he has learned in coaching so far – Coach Malone is a problem-solver
- Decide in what areas your talents are … protect your best features – don't get involved in the things at which you are bad – surround yourself with people who complement your skills
- Different approach to Championships … get the athletes to understand the Rest and Taper Plan – give them ownership of the process

HOW I GOT THERE & THINGS TO CONSIDER

Focus on the Swim Year

- Look at the four-year plan

Make your plan educationally sound

- What does it really take to be a doctor, lawyer, swimming champion?
- Not just scientifically correct – must involve a logical progression
- Like medical school requirements, there are swimming championship program requirements

Coach Malone uses a 5-year Plan

- Year 4 and Year 1 are one and the same
- Year 4 = evaluation and plan for the next period
- Each year leads to the next
- Each phase leads to the next

Focus on where the child is going to be

- 90% are in high school, therefore the coach is like a high school teacher
- If there are grade school athletes, be cautious with them and make sure they are not treated like high school students

TRAINING PHASES

Phase 1 – Foundation Phase

- Do everything that is in Phase 3, but only for 10% (or so) of the time
- We are creatures of habit and neurological morons
- Must swim fast all of the time
- Must use great technique
- Must work all of the energy systems
- Heavy endurance – base training
- Talk about how to race versus racing
- Starts with stroke technique
- What kind of shape does the swimmer need to be in to do well in July and August
- Best times, per swimmer, per meet
- Don't practice losing – we are creatures of habit
- December (end of phase) – talk about meets
- No resting or shaving for meets in December
- Training to race in July and August
- Don't change the plan to race in the moment
- Theory … the faster the swimmer is in December, the higher up on the peak performance mountain the swimmer is – therefore, there are greater odds that the swimmer will hit the peak before July and August – Coach Malone wants his athletes to peak in July and August
- In this phase, Coach Malone shows no reaction to their meet performance

Phase 2 – Training & Racing

- More tuned into meets
- Phase starts after Christmas and goes until after March/April Championships
- Shave for the big team meets
- Only shave for the highest level of competition that attending
- The swimmers have to make the **big dance** without resting or shaving
- Coach Malone hopes that they can reach their Phase 2 peak
- It is critical to decide where you want the athletes to be at the Phase 2 peak
- Coach Malone does not believe that he rests his swimmers too much … they rest for 3-7 days – Taper Quality Phase is 21 days – 14 days out from championships, reduce the strength training – keep up the dry land until they leave for Nationals – at Nationals, they can choose whether or not they do their dry land – Coach Malone encourages them to stay with their routines
- Coach Malone likes to win championships and likes the athletes to reach their peak performance levels
- Character of a champion … not an easy road – must have confidence to overcome obstacles – give athletes the opportunity to become champions

Phase 3 – Championship Training & Racing Phase

- Breaks … December 24 and 25 = break; one week break after championships
- Training Schedule
  Week 1 = 3 times a week
  Week 2 = 5 times a week
  Week 3 = 6 times a week
  Week 4 = doubles
  If Nationals are in April, then swimmers come into Phase 3 on Week 4
- The more elite you are, the less time off you have
- Kids pick up interval lanes and group names … 100x100 @ 1:05 or under = Hall of Fame
- Rest 10-14 days in Phase 3
- 28-day Taper and Rest period
- Keep the focus on the prize and the team goals
- There is a lot of heat on the top of the mountain … evolution of the athlete to understanding how to get to the top – must be consistent to race at the highest level – athletes need to take responsibility for their training and racing
- Katherine Fox 1996 … showed character and confidence – **selected** to be on Relays at the Olympics – privilege and pride – USA is #1 – we coaches are the beginning of USA Swimming success

Quality – Taper – "Rest"

- No rest during practice
- If you are resting, then you are not training
- Practice is the time to get better – not to rest
- Recovery time is factored into training plan
- QUALITY
- Coach Malone does not want them to need 3-4 days to recover from racing or hard training … they need to be up to competing often at a high level to make it back to finals
- The goal is to get to finals … quality, taper and rest must be measurable – taper = cut down the volume … first cut down the total time that they are training, because wants to preserve the quality of training
- Use words with depth … people do all kinds of great things under harsh criticisms – we need to expect a lot from athletes – prepare them to handle the challenges
- As an Age Group Club, there is one major focus for the year for the athletes … later in their careers, they can do more major events per year – no rest, no taper in December unless they will not taper in March/April – if there are two championships per year, one is more important than the other – College Swimmers (conference level swimmers) … start the year when they get home so that they can peak in February/March – the rest of the team is at the end of their training year
- Women … cannot and should not do multiple shaves/peaks – women should shave and peak once a year – need to be tough and proud to be a swimmer – commitment, ownership, character – perseverance is part of high level success
- See yourself as a coach developing swimmers – not individual events
- Versatility = great athlete, swimmer, character of champion, strength goes into strong event

SUBCONSCIOUS

The mind runs the body

Understand the subconscious

Be consistent

- Protect the foundation
- Do the core warm-up and warm-down
- Don't let them get too out of shape at championships
- They will lost their ability to recover if out of shape

Men and women are emotionally different

- Coaches need to understand it
- Separate meetings at championship time
- Focus on the same goal, but get at it from a different angle
- The differences are not as big a deal until they are older
- Championship characteristics are the same!
- Women don't make big changes until their 20's
- Men make big changes between 16-18
- Men can self-talk themselves into a race
- Women must be doing something to engage their bodies and their minds before a race

TRAIN, TEACH, DEVELOP THE CHARACTER OF A CHAMPION

The whole team comes back to finals as a team

Everyone gets back in the water together

- Small set for those not swimming finals

Be concerned about 40th to 1st place and how to get them there

Specifics

- Evaluate meets … primary meets – work backwards
- If no warm-up pool, know how to deal with it and how to recover
- Top 2-3 meets per year … look at number of days, events, event sequence – look at number of events for athletes between prelims, finals, relays – consider food options, dining options – consider routine of travel for meets, walking – talk about it far ahead of time – pool situation – weather conditions – be aware of the yards or metres that the athletes will be doing each day at the meet – any problems that may arise
- Meet preparation … practice what they are going to do – turn meet preparation into something FUN, exciting, building toward the peak

Structure Warm-Up

- Use all four strokes
- Core warm-ups
- In practice, five minutes of warm-up, 45 minutes of dry land, then right into water workout
- Do the first set of practice
- Get ready to race
- Enhance sensitivity to the water without getting over-focused
- Include kick, SP3, energy systems, pace work
- Pace work within core warm-up

- Phase 1 = 3000-3500 yards in warm-up session
- Phase 2 = 3000-2500 yards in warm-up session
- Phase 3 = 2000-2500 yards in warm-up session

Warm-down

- Number of minutes
- Like first set, but fewer yards
- 10-20 minutes
- Not too structured

Coaching at a swim meet

- Coach Malone says that his weakness is that he is a control freak
- The swimmers need to be in control and have ownership over their swimming
- The coach's job is to observe … be the eyes and the ears – be a mentor
- The yelling and screaming of the coach should not motivate the swimmer and should not create the race
- Teach-coach-do
- The goal is for the athletes to be as a good a coach as he is
- Position yourself on the deck to handle the volume of swimmers that you have in the meet … if there are 50 swimmers in the meet, Coach Malone will position himself on the pool deck – if there are 20 swimmers in the meet, Coach Malone will position himself in the best viewing area, even if it is off the pool deck
- If the swimmers make it to national level meets, they need to be ready to coach themselves and work with new coaches … characteristics of a champion – at international meets, the deck is sterile – prepare the athletes for this sterile deck, the fact that you will not be on deck and that there will be officials everywhere – watch the races in the stands for the technique and the emotions of the athletes, let them focus on themselves
- Go over what they are going to do at each meet
- Individual differences of national calibre athletes … underwater – personal style – same principles, adapted
- At the meets, give them space to make mistakes and take responsibility for themselves to that they can learn
- Coach Malone never takes 25 or 50 splits, rather he evaluates … tempo – start breakout – stroke cycles
- Does not do starts at meets – they start in heads
- Tell the international coaches how your athletes train
- Splits don't help … pace from a push – tell them if it is OK, do not tell them their time – pace 100's, second 50 is critical
- The swimmers can ask the coach when they need help
- Work on starts for underwater swimmers … have championship suit on when working on dives

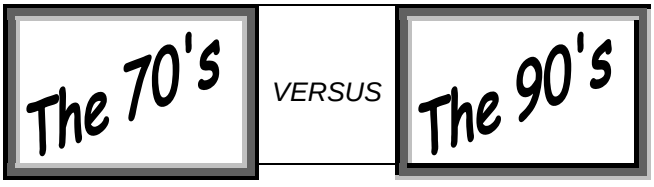
CONCLUSIONS

Data

- Splits, stroke rates, stroke cycles
- Compare your athletes … 15-metre break-out times – count kicks – breakouts are important

Handle Athletes

- Carefully
- Last week – back off so you don't over-coach them
- Ask questions
- They don't always feel good … they don't have to feel good to swim fast – football players, boxers don't always feel good, yet are able to be fast
- Stroke rate, splits and attitude are more relevant than how they feel
- The kids must look at the numbers and tell the coach what they think
- Use assistants to get data
- Help the kids coach themselves
- Don't let outside factors control their performances … uncontrollable factors: pool temperature, etc. – inform them of conditions, check the conditions and help them be ready – commute time, pool layout – assess competition
- Help athletes deal with the controllable factors
- The coach must keep calm, stay focused and not get over-excited
- Treat the athletes as if they were just at another swim meet
- Take the attitude that the Olympic Trials start after the meet … treat Olympic Trials as if it is just another meet
- Celebrate after the meet is over
- The Olympic Games are the important meet, so stay calm and focused. Don't party yet!



What was the difference?

By Jonty Skinner

Reproduced from American Swimming Magazine 2003 Issue 1

There has been a lot of debate in recent years with regards to the rate of success at the Olympic Games in the 70's versus the 80's and 90's. It is obvious that the USA was extremely successful at being able to go from the Trials class meet and consistently swim a lot faster at the Olympic Games.

For various reasons many coaches feel that we should be swimming our Trials as close as possible to the Games and, based on the 70's results, you would easy that this would be the best way to go. In the 90's we changed to a long-term preparation format and although the performance results have not been the same as in the 70's, they have produced the best percentages since the 70's era.

To simplify the issue, in this paper I am going to speak mainly to the men's side of the equation. In the 70's the men were able to swim faster at the Olympic Games 80% of the time. In the 80's, 25% of the time … in the 90's, 39%.

What are the main differences between the 70's and the 90's?

Is it the time difference?
Is it the training done before the Trials?
Is it the training done between the meets?
Is it the level of competition faced at the Games?

It is very easy to say "*Yes*" to all of the above, **so** let us view them individually.

TIME DIFFERENCE

It would be easy to say we should go back to the 70's format since it was the most successful period in our history. However we went to two meets in the 80's (28 and 35 days), and had some of our worst performances ever. So to make a decision based on one piece of information might limit the decision-making process.

TRAINING BEFORE THE TRIALS

This, in my opinion, looks at the heart of the issue. The type of training environment in the 60's and 70's is different from the kind of preparation we see in today's programs. The 60's introduced interval training, and the coaches of that period and into the 70's were bent on taking this type of adaptation to its limits. Aerobic training foundations were in the majority at the time. Fewer coaches produced Olympic athletes during the 70's, and the majority reinforced endurance training as the key to their success. Because the majority of the programs were based on intense aerobic conditioning, it was easy to maintain this level of fitness from the Trials to the Games.

The middle 80's started a trend towards less volume and the introduction of a greater anaerobic component into the training cycle. With the advent of the 50 and the short relays at the collegiate level this reinforced a trend that was well on its way towards gearing all training and adaptation to the shorter events.

The main issue lies, I believe, in the preparation. Create an athlete whose foundation and power is based on endurance, and you will have an athlete who will be able to sustain their performance. Create an athlete whose race energy delivery is dependent on the anaerobic side of the equation, and you will have an athlete who can race at the elite level, but will struggle to maintain their base cardiovascular conditioning. With many of today's programs geared more towards the anaerobic side, we will struggle to achieve the same level of performance in Sydney. I am probably the only coach in the country that has physical evidence to prove this point, and there isn't a question in my mind that this is a critical factor that has to be considered. Do we change the position of the Trials? Or, as coaches, do we rethink our entire preparation process?

TRAINING DONE BETWEEN THE TRIALS & THE GAMES

Speak to anyone of the coaches that were a part of the '76 preparation and they will all talk of the great camp they had. They talked about working hard as a team, and about racing swimmers against each other to get them ready for the Games. They talked about going **back to work** and getting some solid aerobic work between the meets. This is the exact opposite of what we do today. Everything is individualised, and personal coaches have a much greater say in how things are done. We seem to have gone from a period of tremendous trust and team commitment, to a period where we question whether anyone else can coach your swimmer. A few well-accepted chiefs to many braves believing they're the only ones who can get the job done.

If we go the 35-day route, should we go back to what worked in the 70's? My opinion is no. Today's swimmers come from different backgrounds, and although one would like to go back to the old days, I just don't think it would work as effectively. It would be better to go back to the 70's preparation model in order to simulate the entire process.

THE LEVEL OF COMPETITION

The men, without a doubt, face a much higher level of competition in the 90's. You could name on one hand the number of foreign athletes who were gold medal contenders in the 70's. Today you'd run out of hands. I have also stated that although we seem to have a similar level of athlete with regards to the gene pool, we

haven't been able to consistently attract those athletes who are taller than their peers. The rest of the world without the volleyball/basketball attraction have been able to find talented athletes who are taller, and in the long run this simple fact alone will lead to the loss of many medals.

CONCLUSION

It would be unfair to make a decision today based on the face value of what happened 20 years ago. So many things have changed that it is almost impossible to compare the eras. My information has been based on talking to some of the coaches from that era, and piecing together information based on my knowledge of this sport.

With the knowledge of many of our current programs and my personal experience in tracking elite athletes' training adaptations, I have this to say.

If we stay the course on 28 to 35 days out, then we must reconsider our long-term preparation for the Trials. If we do not do this, then we are inviting the grim reaper into our parlour. Since I don't believe that this is possible, our next best bet at this point would be to allow the coaches and athletes a full level of preparation for the games. This would give us our best shot under our current training conditions and environments at maintaining our ability to be the best in the world.

ABILITY TO PERFORM BASED ON DAYS OUT OF THE MEET

Meet	Location	Days Out	Women %	Men %
1982 WC	Guayaquil	8	29	25
1978 WC	Berlin	13	54	79
1994 WC	Rome	15	50	36
1972 OG	Munich	25	67	75
1976 OG	Montreal	26	47	85
1984 OG	Los Angeles	28	63	35
1988 OG	Seoul	35	20	15
1986 WC	Madrid	50	32	12
1996 OG	Atlanta	127	54	42
1992 OG	Barcelona	142	35	35
1991 WC	Perth	156	52	22
1998 WC	Perth	161	50	19
	Total Average		46	40
	Average 70's		56	80
	Average 80's		36	22
	Average 90's		48	31

MULTIPLE ZONE

Dry Training

By Pete Farwell
Track & Field Coaches Review
www.ustrackcoaches.org
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2003 Issue 1

In the distance a far-off peak looms, gleaming in the light of dreams like Mt. Everest. The runner and the coach gaze forward to it, a goal on the distant horizon of a season, a year, or a career. The question they ask is *"How high can we ascend, how quickly and how safely, and how to time it so the summit is reached on the perfect day?"* In the rarefied atmosphere of championship competition the athlete needs a fully adapted aerobic system, able (as well) to withstand the most demanding anaerobic bouts and to call on quick reaction high-speed movements.

Oftentimes, the athlete has put in years of preparation for the culminating climb, at other times the runner has no prior training. In either case, a long-range macrocycle plan can help put all support systems and talent into place. A first step, even before setting forth, is to have a medical check-up and a biomechanical analysis to identify weakness, imbalances, and to make orthotics if necessary. Equipment purchases, a dietary regime, and rudimentary fitness preparation should precede real training. Base Camp is reached; the coach and athlete will reassess the current fitness level and future plan while continuing to build endurance, strength, flexibility, form and cadence, as well as speed. Such plateaus will allow the athlete the chance to recover from hard training before the next challenge of upward progression.

The long gradual build-up affords a wider (bigger) base and the opportunity to climb a higher peak. Even so, every athlete will have a somewhat limited time in which to fit in all sorts of training in the proper progression, mix, and proportion. Certainly, the athlete's ability to accomplish the training in good health, both physically and mentally, is one of the paramount challenges. Too many hard workouts in succession without enough recovery can backfire by depressing the body and/or the spirit. Besides general muscular soreness and fatigue or overall loss of energy, one must guard against traumatic and overuse injuries of those muscles, connective tissues, ligaments, shins, etc. Faced with too many workouts and seemingly not enough time, what is a coach to do? The planning can indeed be a puzzle.

As dedicated as runners may be, it is a rare one that can handle anything like the volume of training that a swimmer, for instance, can. No two-a-day workouts of two hours or more for a runner! So a coach must design workouts that efficiently stimulate the organism at the right intensity to elicit the desired response, while

still allowing sufficient recovery. As an example of the dilemma, we can look at the debate about doing two (or even three) workouts per day in contrast to one long endurance workout of over 90 minutes to promote capillary expansion. A novice runner (or one coming back from injury or layoff) initially unable to run a long way, might begin with short 2-3 mile runs, then do that twice daily, before building endurance with days of three runs of three miles. He/she could then move up to two sessions of five miles, before reaching 10 miles in one run, for a day's training. This runner will have less chance of injury by spreading moderate stress over more workouts.

Later in higher volume periods, the athletes can do some morning **doubles**, keeping in mind that athletes need (and collegiate ones especially have trouble getting) enough sleep. A possible solution is to alternate days, and later – even weeks, of extra runs or sleeping in. In this way, there may sometimes be less sleep than ideal and more fatigue, but that period would be followed by a chance to recover before the system becomes severely drained.

Now to face the question, "*What principal workouts to do, when, and how often?*" In the coach's specific plan, a build-up of each system begins at a certain period, increases as the runner adapts, reaches a crescendo, and then often is **maintained** through the peak as other systems become the top or secondary priority of training. Coaches know that not all workouts end up at the exact paces for aerobic threshold (AT), lactate threshold (LT), VO_2max, or high speed. The concept of combined zone training (between AT and LT or between LT and VO_2max) has been used with success, both to hit different paces (like 10k pace at 92% VO_2max) and to raise those thresholds. Furthermore, the runner will often cross zones in a workout as when going uphill on distance runs, doing fartlek, or negative splitting (finishing faster) a distance or tempo run. These types of workouts are harder for the coach to accurately assess the intensity, even when the athlete gives subjective feedback afterwards.

Another method of attacking all zones is to use the five-tier system exemplified in the Peter Coe or Joe Vigil methods. In a two-week period for a mid-distance runner they focus separate workouts on 400, 800, 1500, 3k, and 5k paces, and when training longer distance runners, the range many emphasise 800, 1500, 3k, 5k, and 10k paces in each training block. During the competitive track season, race distance may be varied and counted as the equivalent of a workout for that distance; but, in the cross country season there may be a longer race each weekend. The problem then is how to get in enough work at each of the other levels without overstressing the body?

One solution is to construct workouts that not only set paces in combined zones (those between two inflection points) but to purposely hit multiple zones in one workout. For instance, a session can combine some **cruise intervals** at lactate threshold, some 3k/5k race pace intervals to stimulate VO_2max, and some speed in the anaerobic zone at 1500 pace and below. Such a workout evokes a range of pulse rates and recruits a variety of different muscles and energy systems. In the process, it gives a strong but moderate stimulus to those varied muscular and energy groups, a stimulus from which each can recover, adapt, and super-compensate. Moreover, by changing the muscle pattern and recruiting different fibres during the workout, there is an opportunity for those muscles to relax with less chance of injury.

A further advantage of such multiple zone workouts is that variations can be given two or even three times a week, thereby stimulating those systems more frequently than, if not to the same extent as, a workout in a single zone would. This may be particularly effective in the mid to late portion of general preparation period (the first higher Base Camp) when volume is at a reasonable level, yet none of the harder work zone systems can handle too much work.

A base in each of the training zones can be laid with no **psychological intensity** that might **burn out** the athlete. Such a workout adds variety and is a refreshing mental stimulus, and promotes a smoother, slightly faster base pace, with good form, on the generic distance runs, which often are the staple of such a preparation period. Similarly, in the specific preparation phase when workout volumes are higher, a greater stimulus in each zone will further adapt the systems, and give a greater cumulative endurance effect. In each of these periods some of the benefits will be...

1. Continued aerobic conditioning
2. Increased strength and flexibility
3. An increase of the lactate threshold
4. An increase in VO_2max
5. Heightened anaerobic efficiency for lactate buffering (sodium bicarbonate)
6. Improvement in running mechanics and efficiency
7. Improved speed development as well as fast finishing (learn to kick)
8. Ability to surge and the learning of some race tactics
9. Pace cognition, which is especially useful in cross-country running (reliable splits often are not available)

Later in mid-season (late special preparation or early competition period) these multiple zone workouts continue to stimulate several systems just at the time when it is most crucial. During this crossover period, further lactate threshold work is still beneficial. Speed development allows for more work without injuring muscles, lactate doses are increased, and VO_2max intervals become a priority. A multiple workout allows the athlete to do a high volume in one day without overloading any single system. The workout **straddles** the physiological systems, crossing from the aerobic to anaerobic threshold and above, thence into VO_2max territory and occasionally into lactate, and then back through that range. This can be the answer to the coach's quandary of how to fit the five-tier training paces into each training block while still racing on the weekends. Adequate recovery is enhanced by a good cool-down to flush the muscles, stretching, ice and massage, and timely restoration of glycogen energy stores. A lighter dose (intensity, and probably volume) of running would normally follow on the next day. Alternate training, especially in the pool, may be appropriate.

Finally, as the peak is approached and attained, the multiple zone workout is perfect for finely tuning the now powerful and efficient **engine**. Once again, no single stimulus is overdone, and different pulse rates and slightly different muscle groups are called upon. One complete workout in each of the final three weeks may suffice, depending on how many races also lead up to the finale. In the typical collegiate championship scenario the regional meet is one week before nationals. The **icing on the cake** workout four days prior to each of those races should be about half the volume of earlier workouts.

With just a small dose of cruising at lactate threshold, one injection of VO_2max pace, a faster finish to sharpen the speed without submerging the muscles in lactic acid, and some relaxed running in the aerobic range, the runner is primed for fresh all-out racing. The muscle fibres have knit up any micro-tears and are at top capacity, as well as super-charged with glycogen stores for energy.

(See Table 1): Let us outline some examples of Multiple Zone Workouts as they may be done in early, b) mid-, and c) late season. (These workouts are designed for 8k racers. Volume may be higher for 10k racers and somewhat lower, with slightly more emphasis on VO_2max and less emphasis on threshold range, for 5k or 6k racers.)

Each of these workouts allows the coach to elicit a range of pulse rates, often repeatedly, in one session. And the athlete learns to run efficiently, relaxing at speed, at each pace, as well as how to shift between zones, recover on the run, cruise, surge, and kick. Each stage on the climb to championship form has been gradually attained through stimulus, adaptation and recovery. The final lung-straining ascent to the summit results in a triumph well worth the effort. The athlete, as well as the coach, appreciates the incredible view from the top, while breathing the rarefied air of peak performance!

TABLE 1

1. Steady run with stride pickups…
   - (a) 6-8 x 15 sec
   - (b) 8-10 x 20-30 sec
   - (c) 2x 30-60-90-120 sec
2. Cruising @ 10k + before and/or after race pace, speed, hills, VO_2max or lactate…
   - (a) 2x2 min c, 4x400 at 5k, 2x2 min c or 2x2 min c, 6x250 smooth hill runs, 2x2 min c
   - (b) 2x4 min c, 2x mile at 8k, 2x800 at 5k, 2x4 min c or 3&4 min c: hills: bound 2 sets 3x50m, q3x1200, sprint 4x100; 4&3 min c
   - (c) 2x4 min c, 800-300 at 3k w/ 30 sec jog, 4x400 at 3k w/ 30 sec rest, 1200 at 5k (last 300 kick), 2x3 min c or 3 min c into 1 min surge at 3k into 3 min c into 1 min surge at 3k, 1000 at 5k (last 300 kick), 2x2 min c
3. Intervals with pace cutdowns…
   - (a) 6x400: 2 at 10k, 2 at 5k, 2 at 3k
   - (b) 2x800 at 5k, 3x600 at 3k, 4x400 at 1500, 4x100 at 800 before & after
   - (c) 3x600 at 5k, 3x400 at 3k, 3x250 at 1500
4. Fartlek-style continuous stage-pace increases to teach the athlete pace judgement, changing gears, surging, and going fastest when fatigued.
   - (a) 3-4x2 min (60 sec at 10k, 40 at 5k, 20 at 3k)
   - (b) 6x3 min (60 sec at 10k, 45 at 5k, 45 at 3k, 30 at 1500)
   - (c) 3x4 min (90 c, 45 at 8k, 45 at 5k, 40 at 3k, 20 at 800)
5. Hill circuits incorporating bounding, short sprints, longer repetitions at VO_2max or threshold, fast turnover downhills and flat cruising between sets.
   - (a) 3x50m hill stride, flow down, 2 min c, 2 min hill, repeat all w min c
   - (b) 3x(30m hill bound alternate w/50m hill sprint, jogging down) 3 min c 3x(1 min hill stride, jog 30, 1 min fast turnover down) 3 min c 3 min hill, jog down, repeat first bound/sprint part, 3 min c
   - (c) 4 min c, 4x2 min hill w/ 1 min fast down and 1 jog between, 4 min c
6. Circuits combining weights, exercises, drills with strides, some repetitions and some easy distance running.
   - (a) 3 miles easy, 2 sets 10 fluid strides with body weight exercises after each stride, 3 miles easy
   - (b) 2 miles easy, 2 sets (10 strides and exercises as above, 3 min rest then repetition between 1k and 2k), weight circuit, 3 miles easy

(c) 2 miles w/ 4 min c, repetition 1200, 10 strides & exercises, repetition 1200, 2 miles w/ 4 min c

7. Two shorter workouts in one day, one which may be cross-training (stairmaster, elliptical runner, Nordic or downhill skiing, mountain or road or stationary biking, pool running or swimming, etc.). They can stimulate the same system through different activities, or work in different zones…
   (a) a-easy 5 miles with 3x2 min cp- 30 min bike or swim with 8x20 sec faster
   (b) a-6 miles w/20 min fartlek of 60-90 sec faster build-ups p- 30 min pool run w/15 min tempo
   (c) a-5 miles w/2x5 min cp- 5 miles w/2 sets 6x30 sec fast strides, 4 min at 5k in middle
8. Recovery days can inject a lighter stimulus either by running in zones with low volume or hitting cardiovascular systems using different muscle groups via the cross-training as outlined in #7 above…
   (a) Pool workout with 15 min swim, 15 aqua run each with 8x30 sec fast and 2x3 min tempo
   (b) 5 miles with 4x20 sec stride, 3 min at 5k, 4x20 sec, 3 min c
   (c) Pool workout with 5 min kicking, shallow area running drills, 6x1 min fast swim, aqua run with 2 sets 2-1-1-30-30 hard

RECOVERY

RESTORATION & REGENERATION AS ESSENTIAL COMPONENTS WITHIN TRAINING PROGRAM

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Recovery sessions are rarely incorporated into sports specific training programs, except in Eastern Bloc countries. Yet the benefits of structured recovery periods are well documented both in terms of improved performances and decreased injury rates. Coaches and athletes alike need to be more aware of the importance of restoration and regeneration following heavy workloads, and of how to use the modalities available to facilitate recovery. The desire to provide peak physical and psychological performances during competition necessitates rigorous preparation involving intense and stressful training. Adaptations to heavy workloads are dependent upon the athlete's physical and emotional ability to cope with increased work volumes and intensities. The overload threshold required for optimal improvement without the corresponding problems associated with over training is difficult for coaches to gauge. Individual athletes within the same sport can respond differently to the same training loads, and preliminary symptoms warning of imminent overtraining are elusive. However, once that state has been reached there are several distinctive physical and psychological markers evident (Table 1).

Unfortunately the effects of overtraining can negate months of hard work and detract from the athletes' full potential. In many situations overtraining leads to **staleness**, then **burnout** or injury, or both. These require lengthy and often expensive rehabilitatory processes for athletes, team and coach. To overcome this problem many Eastern Bloc countries sustain maximal workloads and intensities with minimal detrimental effects by structuring recovery sessions within training regimens (Kopysov et al 1982; Matusezewski 1985). The range and scheduling of recovery modalities is extensive and tailored to suit the requirements of individual athletes and their respective sports (Zalessky 1982). The systematic inclusion of recovery sessions reduces overtraining problems and injuries and also appears to significantly increase performance by enabling the athlete to cope with greater workloads (Talyshev 1980; Birukov and Pogosyan 1983; Zhang et al 1987).

RECOVERY, RESTORATION, REGENERATION & REHABILITATION

Recovery is a generic term used specifically with reference to the restoration of parameters in either or both physiological and psychological states that have been excessively stressed or altered during a particular activity. These states contain variables or markers which can be measured objectively (Yessis 1982:38).

Restoration refers to returning physiological markers to normal levels whereas regeneration refers to the recovery of psychological traits particularly associated with mood states. Rehabilitation refers to recovery from injury or illnesses which are often the result of overtraining. Physiological and psychological recovery are both equally important and excessively stressed athletes may exhibit symptoms or signs indicative of overtraining, in both states (Table 1). Some of the signs and symptoms shown in Table 1 can be experienced following heavy and intense workloads even though a classic overtrained state has not been reached.

RECOVERY METHODS

Recovery methods fall into four major categories...

1. Work/rest ratios, including light active recovery
2. Nutrition
3. Physical Therapy
4. Psycho-Regulatory Training (PRT)

Restoration and regenerative programs

followed by Eastern Bloc countries employ all of these procedures in varying proportions depending on training workloads, the demands of the sport, and the individual needs of the athlete (Sports (eds) 1986: Fox 1986:9). Zalessky, also notes that the type and amount of restoration employed depends on the extent of the athlete's state of fatigue (1984:53).

WORK/REST RATIOS

Work/rest ratios vary both within and between work sessions. Successful schedules for specific sports are well documented from the West as well as the Soviet Bloc. The body requires recuperative time to allow for adaptive processes to occur and promote anabolic activity such as strength gains. Consequently, rest periods need to be programmed into training schedules, but these vary depending on the requirements of the sports and intensity of the workload.

For example, prescribed rest days for jumpers and throwers differ despite the fact that both are explosive anaerobic sports (Bakarinov and Zalessky 1982).

Although most track and field athletes have one passive rest day per week, workloads vary both within daily sessions and between training phases. For example, the training volumes and intensity between the preparatory phase and the competitive phase differ. A high compensatory effect is achieved in the preparatory period via three consecutive weeks of increasing workloads, followed by a fourth week with significantly lighter training.

During the competitive period the lighter training loads extend over two weeks. Alternating training loads between sessions and incorporating active rest periods is designed to produce an undulating **wave-like** growth curve. Peaks and troughs correspond to workloads (volume and intensity) and rest.

Daily programs for track and field athletes usually begin with lighter morning sessions which have a preparatory role before the heavier main sessions during the middle of the day. Evening workouts are lighter and designed to restore the functional capabilities of the athlete.

Cross training activities can be used as a form of active rest, especially during the competitive phase. This can help switch the psychological direction of the athlete to rest better from the specialised event and help to restore the functional capabilities of the central nervous system.

NUTRITION

Similarly, nutrition and the dietary requirements for sporting events require careful programming. The body requires food not only for energy but also for anabolic and reparative processes. The link between overtraining and a depressed immune state is also an area of recovery being addressed through nutrition (Telford 1990). A poor or inadequate diet can lead to fatigue, irritability and sometimes to eating disorders such as anorexia.

Training and competitive diets will vary according to the type of activity being undertaken. Adequate intakes of complex carbohydrates are essential for all athletes, but especially crucial for events lasting over one hour. Carbohydrate loading or **super-compensation** practices are designed to maximise the storage of glycogen and prevent the early onset of fatigue. Rehydration can also prevent fatigue and assist athletes to sustain the intensity of a training session.

All athletes require a well-balanced diet containing the essential macronutrients of meat, fish, dairy products, fruit and vegetables, cereals and bread. Protein is especially important for muscle regeneration and the prevention of exercise-related anaemia. In particular, athletes involved in anaerobic activities require additional dietary protein to facilitate training adaptation and recovery.

The interplay between the immune system, white cell production, the production of free radicals and those athletes involved in continual heavy oxidative metabolic activities, is complex. Antioxidants such as vitamins E, A and C provide protection against the action of free radicals, and dietary supplementation of these vitamins may assist athletes in maintaining heavy training loads.

Similarly, minerals are important for muscle regeneration. Muscle cell damage can result from strenuous training or alter the balance of sodium, potassium and magnesium within cells leading to chronic fatigue and tiredness. Extra intake of minerals and trace elements may be necessary to assist recovery but synthetic supplementation may not be as effective as increased dietary sources, due to the , reactivity of some elements and metals with other foodstuffs in the gut.

Special attention is required for food intake pre- and post-training, and during competition, to maximise energy stores, minimise fatigue and to assist with tissue regeneration.

PHYSICAL THERAPY

The most commonly used modalities relate to a wide range of physical therapies available. Water therapies include a variety of spa, float tanks, baths, (contrasting temperatures, ionising, and aromatic), hydromassage, whirlpools, Sharko showers and floating stream showers. Sauna (dry baths) are frequently used with specific regimens developed for different

sports and workloads, and decompression chambers (baromassage) are used in the Soviet Union for extremely fatigued muscles. Eastern European countries also use a wide variety of electrotherapeutic procedures for restoration whereas many of these are largely restricted to rehabilitatory roles in the West. Ultrahigh frequency modalities, magnetic field generators, interferential and ultra-sound are some of those most frequently employed.

MASSAGE

The most common and frequently used restorative modality for both East and West alike is massage. This is relatively inexpensive and can provide for both restorative and regenerative recovery. Plus give the individual athlete specific feedback about the physical state of specific body parts.

There are five basic terms describing different massage manoeuvres, vibration (shaking), tapotement (percussion), petrisage (kneading), effleurage (stroking) and friction (small range intensive stroking). (Yessis 1986; Kresge 1988.)

Sports massage uses different combinations of these techniques and, relative to training times, is regarded by many authors as the most effective means of recovery. Apart from massage sessions for rehabilitative reasons, treatments are administered during three phases...

1. Within the training phases where massage is given during the work sessions to help accommodate for high training loads and to increase the athlete's training potential. (Zhang et al 1987)
2. Preparatory massage given as part of a warm-up phase some 15-20 minutes before competition. This can either relax an over-stimulated athlete or arouse an apathetic one.
3. Restorative massage is given in the post-training or post-competitive phase. This procedure is regarded as being at least two or three times more effective for recovery than passive rest. (Birukov and Pogosyan, 1983). These treatments facilitate recovery from the effects of fatigue, the reduction of muscle tension and a lowering of stress levels.

The timing and frequency of restorative treatments is dependent on the type of activity, intensity and individual athlete (Kopysov et al 1982). When heavy workloads are undertaken, most authorities recommend restorative massage 2-6 hours following the completion of training (Yessis 1982). Frequency of treatments varies from 1-2 per week to three times per day. This variability relates to the sport undertaken, intensity of the recovery program and the availability of a masseur.

The duration of each treatment also varies according to the amount of body surface to be massaged. Whole body or general massage requires more time than a localised treatment concentrating on a specific area or body part. Some authors also adjust treatment times according to the athlete's weight (Matusezewski 1985). Whole body massage lasts from 40-90 minutes while localised procedures range from 10-30 minutes. The general restorative effects of massage have been summarised by Ylinen and Cash (1988).

Although a few studies have considered the psychological effects of massage, the physiological benefits have been examined in more detail (Wakim 1981). The mechanical effects of massage have often been considered in relation to physiological responses.

The squeezing, stroking, compressive and pushing components of manual manipulation facilitate drainage of venous blood and lymph. Venous and lymph backflow is inhibited by valves; consequently altered vascular pressure due to massage facilitates blood flow. Lymph vessels are affected in the same way.

Mobilisation of tissues occurs as they are moved on one another. Manipulations cause slight stretch thus maintaining elasticity and regaining mobility where tissues have adhered within themselves or to adjacent tissues. This mobilising effect is enhanced by improved blood supply which causes increased warmth of the body part.

Massage as part of a warm-up regimen facilitates preparation for the sporting event but is not as effective alone as a combined active warm-up with stretching and some massage. Massage is also an effective adjunct for assisting flexibility, but it should not replace stretching schedules programmed for warming up or recovery.

In the Eastern Bloc and Asian nations, acupressure and acupuncture complement massage as a recovery modality. Acupressure and acupuncture are concerned with balancing energy fields via specific points located on 14 meridians which pass through the body. Acupuncture points have a lower cutaneous electrical resistance than adjacent areas and these can be measured and evaluated. Stimulation of specific points are claimed to influence oxygen uptake, respiration, the immune system and biochemical activities including the uptake of glucose, phosphocreatine, cholinesterase, hydroxy tryptamine and acetylcholine (Wong 1983).

PSYCHO-REGULATORY TRAINING (PRT)

Psycho-Regulatory Training refers to a number of processes generally used to aid an athlete's emotional and psychological state following stress. Relaxation techniques, autogenic training, breathing exercises, musical and light influences, psycho-regulatory training, relaxation massage and flotation are the most frequently used modalities.

Although passive rest is an important component of recovery, the time spent during passive rest can be used to incorporate one of several PRT procedures. Meditation trains the athlete to develop the amplitude and regularity of alpha brain waves in order to produce relaxation. In turn this generates an integrated reflex mediated by the CNS which works in opposition to the flight or fight response. Meditation results in a hypo metabolic state, with lowered BP, HR and decreased blood flow, indicating a calming of the sympathetic NS. This can be used to counter the stress of training or competition which can cause over arousal of the sympathetic NS (Wallace and Benson 1972).

Progressive muscle relaxation (PMR) and positive cognitive intervention are both components of psycho-regulatory training. PMR is a somatic relaxation treatment which uses both active and passive components of attention. The consequent reduction in muscle tension improves the athletes' reaction profile and when used in the daily training program can lead to significant improvement in training and competitive abilities (Litschka-Schimpf et al 1988).

Relaxation massages and flotation assist with muscle relaxation and result in lower HR, BP and improved mood states. These modalities are often used once or twice a week each (Yessis 1986). Modalities such as PMR, PRT, meditation and the use of music can be used daily in conjunction with training sessions.

GENERAL CONSIDERATIONS

The four major recovery areas offer a great deal of scope for designing a recovery regimen specific to the physiological and psychological needs of each athlete. Notwithstanding this fact, these recovery sessions should be regarded as additional to the proper normal training procedures involved within each session. An appropriate warm-up and cool-down regimen should include locomotor activity and stretching routines suited to the preparatory or recovery section of the session.

All athletes should be encouraged to stretch in a warm environment wherever possible. Spas, saunas and showers are ideal places to stretch and self-massage can be used by athletes. A regular sleeping pattern and sound diet are also essential components of a well-balanced training program. For an athlete to maintain demanding workloads without either a loss of performance or increasing the risk of injury, a structured recovery program within the training regimen is essential.

TABLE 1
SYMPTOMS & SIGNS OF OVERTRAINING

Physiological	**Psychological**
Increased muscle tension	Disturbed sleep
Increased muscle tenderness	Irritability
Decreased VO_2 Max	Depression
Increased blood lactates	Increased anxiety
Decreased nerve impulse transmission	Increased fatigue
Decreased aerobic threshold	Decreased vigour
Decreased anaerobic threshold	Depressed mood states
Increased susceptibility to illness	Decline in feelings of self-worth
Decreased appetite	Uncontrollable emotions
Elevated resting HR	Insecurity
Elevated BP	Oversensitive about criticism
Proteinuria	Listlessness
Decreased energy levels	Melancholiness

Increased fatigue = lower tolerance of workloads
Feigley 1984, Yessis 1986, Crampton and Fox 1988, Kulpers and Keizer 1988. Some of the above can be experienced following heavy and intense workloads even though a classic overtrained state has not been reached.

TABLE 2
EFFECTS OF MASSAGE

Mechanical	**Reflexory**
Friction warming	Relaxation
Pumping circulation	Pain reduction
Stretching soft tissue	Opening microcirculation
Breaking scar tissue	Balancing autonomous nervous system
Breaking adhesions	
Increased tissue permeability	
Opening microcirculation	
Enzyme release	
Improved tissue elasticity	

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SWIMMING & THE PRESS GAME

By Robert H. Kelly
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"Why doesn't the newspaper publish the results of our meet?" Coach/swim parent Robert H. Kelly tells you how to solve this problem.

Picture this scene. It is Monday morning after a long-two meet. You are sitting at the kitchen table, enjoying a cup of your favourite coffee. You open the paper to the sports section and look for the article about your swimming team's success this past weekend.

You look at all the pages – and find nothing.

You then get upset, thinking, *"Why doesn't the newspaper publish the results of our meet?"*

This scene is repeated in many homes across our country. The swimmers have a great meet, but there's no mention of it in the local paper. Many coaches, parents and swimmers wonder what they can do to solve this problem.

The reason for this lack of coverage in the local newspaper is quite simple. But as in many things, the obvious is often overlooked. The reason that teams don't get any coverage of their meets is that they fail **to provide** the information to the media.

In my experience, I have found there are many potential stories for a reporter to pursue. However, he or she will choose the stories that are likely to interest the most readers – or the stories that are the easiest to write. A reporter must also *"meet the deadline"*.

The obvious solution is to help the reporter.

The coach must make coverage of swimming as easy as possible for the person writing the article. In my 25-plus years as a swimming coach, I have had difficulties, at times, in getting media coverage of my swimming programs.

Many teams have this same problem. But the one thing that they all have in common is they fail to promote their program. If the coach, or his designee, does not take the time to promote the program … no one will.

Remember these words…

PROMOTE – PROMOTE – PROMOTE

Most college and professional sports teams have a director of media relations or a sports information director (SID). The SID's job is to write, distribute and provide press releases to various sources about **his** programs.

The coach or someone appointed by the coach, needs to become **your** team's SID. After each competition, that person should immediately write a press release and include the results. With the availability of laptop computers and word processing programs, drafting a press release after the meet should be relatively easy.

Most word processing programs have spell check and grammar check, which makes writing a simple task. Most meet operation programs (Hy-Tek and Easy Meet) have a function that will print the results in formats that are convenient for the media's needs.

Many papers will only print the results of the top three finishers in each event – if any at all. You can include all of the finishers in each event, but I would suggest sending just the top three. High School teams have it a bit easier – due to the smaller number of events in their meets. If your results are from a multiple Age Group meet, don't expect the paper to publish all the results. They just do not have the time nor space.

Also remember that the newspapers do not have the space to print every child's name who was in the meet. Press releases that list every swimmer and his or result usually end up in the recycle bin. I know that sounds cruel – especially to parents – but there simply is not the space to cover every child.

Smaller papers can afford to be more accommodating but to be on the safe side your press release should focus on the top achievers and outstanding performances.

BE CREATIVE

This is not to say that swimmers who are not event winners should not be covered. You must look for creative ways to get coverage for these swimmers. Look for things in your program that might be deemed **human interest stories**.

A swimmer who is overcoming an injury and is making a good comeback always makes good copy. This kind of story does not have to be current news. The reporter or sports editor may

hold such a story until she has room to run it or needs "filler" stories on a slow news day.

Look around and think. There are ideas for stories all over the place. The possibilities are only limited by your imagination.

Also, don't forget the local television and radio stations.

I have had success in sending out small press releases about something special that happened at meets or with my programs. Ideas include swimmers breaking a long-standing meet record, or the team extending their winning streak.

The key to receiving coverage is to inform the reporter or sports editor – and to keep him informed. Distribute information regularly and educate the people who are responsible for covering local sports.

For many years, I have produced a team media guide and have distributed it to all the local newspapers, television and radio stations in our area. Computers make this very easy and after the initial work of developing the guide, updating it every season with current information is also very easy.

You can include small bios and photos of each team member and of the coaches. Don't forget to include team records, your competition schedule and other information that would be useful to a reporter.

In addition, an explanation of the events and how meets are run is useful. If you need some ideas, check with your local college or university and ask if they have any media guides for their teams. They will give you some idea of how to develop your guide.

As I stated earlier...

PROMOTE – PROMOTE – PROMOTE

When submitting your press release, think of the ways a reporter can make use of it. If the release is too long – or requires a good deal of rewriting – it may not be published. Email makes an excellent vehicle to submit your releases. If the reporter needs to rewrite or edit the release, it is much easier to edit an electronic message than to retype a fax or a hard copy of the release.

Don't forget to submit photos with your releases. Digital cameras make the photo process very easy. You can still send in prints but digital seems to be the way to go these days. I have never had a digital photo turned down by a newspaper.

In conclusion, it is important to take matters into your own hands and become the SID for your team. It is amazing what a little bit of planning and organisation can do to get your team more press coverage.

When you begin to promote your team, your community, school, parents, swimmers and other teams will see what you are doing. Use good common sense and we will look forward to reading your future articles. Good luck.

Robert H. Kelly is the head aquatics coach at Sam Rayburn High School in Pasadena, Texas. He has coached on the high school and club level for 25 years. In addition to his coaching duties, he has worked as a writer for numerous publications, covering local, regional, state and national sporting events – including the Olympic Games. His wife, Darla, is also a swimming coach and their daughter, Kristine, is a competitive swimmer and water polo player.

TRAINING MICHAEL PHELPS

American Flyer

By Bob Bowman (with Michael J. Stott)
Reproduced from Swimming Technique
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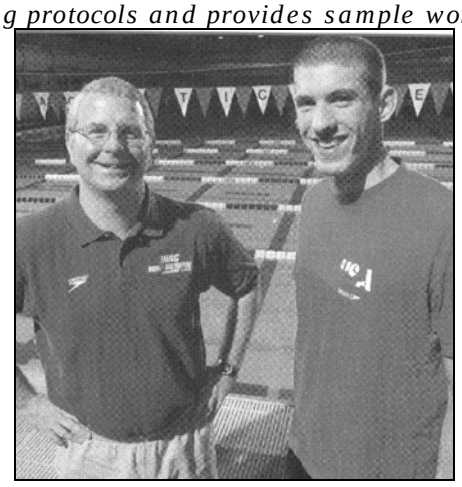
One component of Michael Phelps' phenomenal success is his "made-for-swimming" physique. But the main component is the carefully-crafted training program that his coach, Bob Bowman, has created for him. Here, Coach Bowman – the 2001 ASCA Coach of the Year – describes his training protocols and provides sample workouts.



I think it was pretty clear from the beginning that Michael Phelps was a special swimmer. When he joined us at North Baltimore Aquatic Club as a 7-year-old, he was a baseball-soccer-lacrosse athlete.

His first year, he just did a 60-minute, once-a-week stroke clinic with our aquatics director, Cathy Lears. His training and intensity escalated from there to where, by the time he was 10 and setting NAG records, he was better than many of the older swimmers.

Obviously, we had to do some rapid lane promotions.

To those who knew the Phelps aquatic heritage, his prowess was no surprise. His oldest sister, Hilary, was a national-level swimmer. His second sister, Whitney, was also a 200 Butterflyer. She made the 1994 World Championship team that competed in Rome and she still holds the 11-12 NAG record in the 100-yard Butterfly.

So, in many ways, swimming excellence has been a family trait. And while it is also tempting to think of Michael only in terms of the Butterfly and IM, a review of his record reveals a litany of national rankings in the Freestyle and Backstroke as well.

Supportive parents have aided his climb immensely. They had been through the drill with the older daughters.

Then there is Michael's physique ... at 6-4, he is mostly torso with a large chest and long arms. It is a body great for swimming. He is very flexible throughout the shoulders, upper body and especially in the ankles.

Michael is much more disciplined than he was in his earlier days. He was, and is still, a pretty strong-willed kid. Back then, he did not understand he might have to do some thing he did not want to do – like train, sit still, pay attention and not talk. He was very energetic as a young boy.

These days, he has modified his behaviour – either voluntarily or involuntarily. I think part of that modification started when I pulled him out of the pool and told him, *"You have a stroke that is going to set a world record some day and you are going to do it in practice."*

KEENLY COMPETITIVE

Michael has an athletic mentality second to none. He is keenly competitive and that is what drives him. In competition, he is incredibly focused and able to relax. The higher the level of competition ... the better he is. That is something you just don't see very often.

What he needs to work on is the same thing he had to work on as a child ... to strengthen the connection in his mind between what happens on a daily basis and how that affects what is going to happen when he gets in the big meet. He is better now and better than 90% of the population but he still have those days – about once every six weeks – when he is tired and it's a struggle for me to get him to do things and maintain the same intensity in workout that he gives in the big meets.

In 2002, he had an excellent summer – setting a world record in the 400m IM, taking four events at the Phillips 66 Summer Nationals, notching American records in the 200 IM and 100 Butterfly and swimming the fastest Butterfly leg ever in a 4x100 World Record Medley Relay victory.

In addition to water work, we religiously incorporated a "Mike Barrowman medicine ball routine" into his dry land routine and we did a three-week stay at altitude in Colorado Springs. He has followed his Long Course success with the best fall and winter he has ever had – by far.

Typically, for the last three or four years, Michael has had very good summers. Then there have been down periods in the fall where we have had to work hard to crank him back up to a good mental mode. That has not been the case this year.

This fall and winter, Michael has worked hard on the Backstroke. In fact, he has become really good. Recently, he finished a 15x200 yard Backstroke set with a 1:45. Not too bad! And his Breaststroke – while still not flashy – is greatly improved.

We continue to develop Michael as a complete swimmer. That means some emphasis on the Distance Freestyle. On Halloween, he whipped off a 5,000 Freestyle for time in a 46:34. That is under a 9:20 per 1,000 average. I was impressed with that. In fact, it is probably the most impressive thing he has done, and it might be one of the most impressive things he ever does. That is the kind of thing I am not sure you can ever replicate but it's neat to give him some confidence – particularly since he has to swim against some of the super distance guys.

This is the third year we have approached the training cycle from a yearly perspective. It is not our style at NBAC to talk about the results of success. We are always interested in the process. Michael did not understand the scope of it until his breakout spring nationals performance in Seattle in 2000 when he went from a 2:04.68 to 1:59-flat and set a 15-16 NAG record in the 200m Butterfly. After that, the secret was out.

SETTING GOALS

These days, Michael sets goals for himself. Our eyes are on one medium and one long-range goal ... World Championships in July in Barcelona and 2004 Olympic Trials and Games. In Spain, he will swim a full program that mimics the Olympic schedule, except that there the 400 IM will be on the last day rather than the first. That is a full plate ... six days of prelims, semis and finals in the 100-200 Butterfly, 200-400 IM, 800 Freestyle Relay, 400 Medley Relay and, hopefully, a berth on the 4x100 Freestyle Relay.

To get ready for that, we have concocted a training program that began with a fairly high-mileage fall – a 70-80,000 mixture of yards and

metres per week. There was also 30-45 minutes of dry land six days a week. September through December, we focused on structural adaptation. With that, we are looking to stimulate major physiological growth that will make him go faster. At this stage, we do not emphasise fine-tuning. Instead, we have spent a lot of time on endurance work, improving technical issues and gaining strength – putting money in the bank.

We will continue that regimen through spring nationals. From April through May, we will focus on functional adaptation, working on coordination plus speed- and racing-specific elements for the World Championships.

With all his success, it is easy to overlook that Michael is only a 17-year-old, especially given that he is in his second year as a professional and drives a Cadillac Escalade. But, he has earned it and he is in the process of maturing and securing his financial future. This spring, he will graduate from Towson High School. In the fall, he will be attending classes at Loyola College in Baltimore and continue to train with us at North Baltimore.

Check the accompanying charts for some typical early-, mid- and late-season workouts Michael has done during the 2001-2002 Short and Long Course seasons.

Bob Bowman is the senior coach at the North Baltimore Aquatic Club in Maryland and has trained Michael Phelps for the last six years. Michael J. Stott is a contributing editor to Swimming Technique, SWIM and Swimming World magazines.

SAMPLE WORKOUTS

Friday, Dec. 28, 2001
3:30 p.m. (SCY)
(After 9,000 SCY a.m. endurance IM workout)

WARM-UP
6 x (50 Freestyle, 50 side kick, 50 Butterfly drill, 50 pull buoy, 50 IM)
20x100 on 1:15 (25 Butterfly, 25 Freestyle, 25 Freestyle, 25 Butterfly)
500 stroke (50 kick, 50 drill)
MAIN SET
2,000 timed kick (stroke)
Michael Phelps (MP) = free on board
23:02 (5:48.9 – 5:47.5 – 5:46.0 – 5:39.6)
4x100 IM drill continuous
PULLING SET (pull buoy, band)
10x200 on 3:00
Odd = Freestyle (moderate)
Even = Butterfly (fast)
MP = 2:01 – 2:00 – 1:59 – 1:57.5 – 1:56.4
SPEED SET
24x25 Butterfly on :30 (1-ez[drill], 1-no breath, 1-sprint)
TOTAL: 9,000 yards (18,000 daily total)
POST-PRACTICE
500 abdominals and stretching

Monday, Feb. 25, 2002
3:30 p.m. (SCY)
(After 4,500 SCY a.m. practice – moderate)

WARM-UP
800 mixer on 10:30
4x150 kick on 2:30 (50 Stroke, 50 Freestyle, 50 Stroke)
400 pull buoy on 5:00 (breathe 3-5-7-9 by 100)
200 stroke drill on 3:00
10x50 on :45 (2-25 kick/25 drill, 2-25 Freestyle/25 Stroke, 1-stroke)
MAIN SET (challenge 50s, main stroke)
Michael did Butterfly:
4x50 on 1:30 (25.4-25.6-25.0-24.8) (all groups with 1500 mixed drills)
1x50 on 1:20 (24.8)
1x50 on 1:10 (24.8)
1x50 on 1:00 (24.5)
1x50 on :50 (24.4)
1x50 on :40 (24.1)
1x50 on :30 (23.8)
LONG SWIM-DOWN
100-200-300 pull buoy (lungbuster by quarters)
400 choice kick
300-200-100 IM drills
TOTAL: 6,100 yards (10,600 daily total)
POST-PRACTICE DRY LAND
Wall sit, 2 minutes
3x8 pull-ups (assisted if needed)
2x15 dips (no weight)
Push-ups
10 elbows in + 5 clap
10 elbows out + 5 clap
10 opposite + 5 clap
10 reverse opposite + 5 clap
Ab roller 2x15
3 x ball squats 10
3 x squat jumps 10
Stretching!!!

Thursday, March 7, 2002
3:30 p.m. (SCY)
(8 days from first swim at sectionals)
(No a.m. workout)

WARM-UP
800 (75 Freestyle-25 IM order) on 10:30
6x100 stroke kick on 1:40
400 pull buoy on 5:00 (lungbuster by 100)
200 IM drill on 3:00
8x50 on :45 (25 Freestyle, 25 Stroke)
MAIN SET
15x100 on 2:00 (1-kick, 1-drill, 1-swim)
MP did Backstroke
Kick: average 1:10
Drill: average 1:10
Swim: 54.0 (26.8-27.2)
53.1 (26.6-26.4)
51.6 (25.9-25.7)
50.7 (25.3-25.4)
49.1 (24.4-24.5)
WARM-DOWN
4x200 pull buoy, paddles, band on 2:30 (lungbuster by 50)
200 IM drill
PRACTICE RACING STARTS (15 minutes)
300 swim-down
TOTAL: 5,300 yards

Thursday, Sept. 13, 2002
3:30 p.m. (SCM)

WARM-UP
8x150 on 2:30

Odd = Freestyle (50 breathe opposite side, 50 right arm, 50 left arm
Even = 50 Freestyle (breathe 5th), 25 Butterfly
8x100 stroke kick
2 on 1:45
4 on 1:40
2 on 1:35
8x50 on :50, 2 of each stroke
TECHNICAL SET
8x200 on 3:30 Breaststroke (50 point kick, 50 kick-kick-pull, 50 3 high-3 long, 50 swim) (Focus on positioning)
PULLING SET (pull buoy, paddles, band)
400 lungbuster (breathe 3-5-7-9 by 100)
4x200 on 2:40 (breathe 25 right side/25 left side)
4x200 on 2:30 (hard effort descend)
400 lungbuster (long stroke)
KICKING
1500 Freestyle kick (100 moderate, 50 FAST!)
100 loosen
TOTAL: 8,000 METRES
POST-PRACTICE
30 minutes of running and 15 minutes of stretching

Saturday, Nov. 10, 2002
7:30 a.m. (SCM)

WARM-UP
3 x (200 Freestyle on 2:50/200 IM kick on 3:30/200 pull buoy on 2:50/200 IM drill on 3:15)
MAIN SET
MP Results:
1x200 Freestyle on 2:40
4x20 IM on 2:45 2:28-2:25-2:23-2:21
1x400 Freestyle on 5:20
3x200 IM on 2:40 2:19-2:15-2:13
1x600 Freestyle on 8:00
2x200 IM on 2:35 2:12-2:09
1x800 Freestyle on 10:40
1x200 IM on 2:30 2:04.4(27.5-31.6-36.6-28.7)
100 loosen
PULLING SET (pull buoy, paddles, band)
1500 (descend 500x 1-3)
SPEED/TECHNICAL SET
32x25 on :30 (2 kick, 2 drill, 4 swim) 8 of each stroke
200 swim-down
TOTAL: 9,000 metres
POST-PRACTICE DRY LAND
Medicine ball (repeat 3 times)
Chest pass 10
Behind head pass 10
Right to right pass 10
Left to left pass 10
Between front pass 10
Squat pass 10
Dyna disc 3x30 seconds balancing (each leg)
Foam rolls 3x30 seconds
Ab roller 3x25
Stretching!!!

NBAC ANNUAL/SEASONAL PLAN
GROUP; S.R. PERFORMANCE — 2001-2002 — MIDDLE DISTANCE

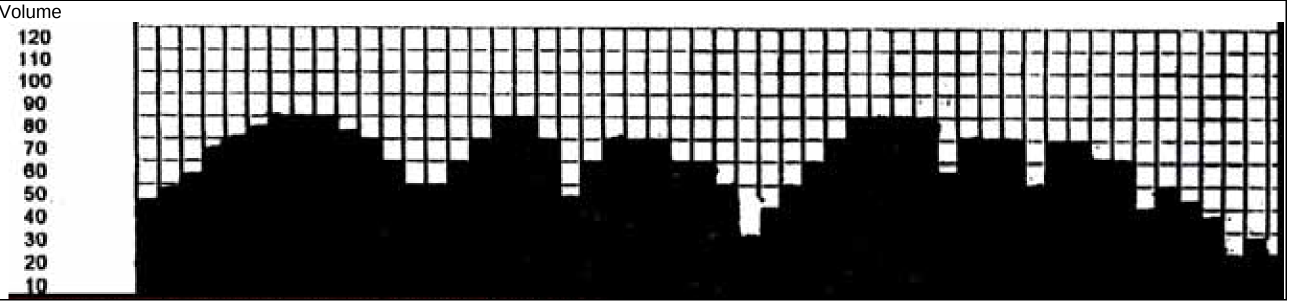
Months	SEP				OCT					NOV			
Dates: Weekly Dates	3-9	10-16	17-23	24-30	1-7	8-14	15-21	22-28	29-4	5-11	12-18	19-25	26-2
Calendar of Meets: Domestic									■				■
Inter-national													■
Location									A6 Dual				US Open
Period-isation: Training Phase	Prep			Endurance									C
Strength	Main			Progressive									M
Endurance	Prog			Maximum									M
Speed	Main			Maintenance									Q
Micro-Cycles	1	2	3	4	5	6	7	8	9	10	11	12	13
Testing Dates			●			●			●			●	
Medical Control Dates													

Months	DEC					JAN				FEB			
Dates: Weekly Dates	3-9	10-16	17-23	24-30	31-6	7-13	14-20	21-27	28-3	4-10	11-17	18-24	25-3
Calendar of Meets: Domestic							■		■				
Inter-national													
Location	Christmas M						Eastern Classic		Badger Dual				
Period-isation: Training Phase		Intensity						Specific					
Strength		Mixed						Power					
Endurance		Mixed						Specific					
Speed		Progressive						Mixed					
Micro-Cycles	14	15	16	17	18	19	20	21	22	23	24	25	26
Testing Dates		●			●			●			●		
Medical Control Dates													

Months	MAR				APR					MAY			
Dates: Weekly Dates	4-10	11-17	18-24	25-31	1-7	8-14	15-21	22-28	29-5	6-12	13-19	20-26	27-2
Calendar of Meets: Domestic	■	■	■		■						■		
Inter-national													
Location		Sectionals									Ann Arber		
Period-isation: Training Phase	Com		T			Endurance						Int	
Strength	Main		Basic			Max						Mixed	
Endurance	Main		Prog			Max						Mixed	
Speed	Max		Main			Main						Prog	
Micro-Cycles	27	28	29	30	31	32	33	34	35	36	37	38	39
Testing Dates	●			●						●			●
Medical Control Dates													

Months	JUN				JUL					AUG			
Dates: Weekly Dates	3-9	10-16	17-23	24-30	1-7	8-14	15-21	22-28	29-4	5-11	12-18	19-25	26-1
Calendar of Meets: Domestic		■						■					■
Inter-national													
Location		NBAC LC Inv		Altitude Camp	Colorado Sp		JEI (LA)	Sectionals			Nationals		Pan Pacifics
Period-isation: Training Phase			Specific						Peaking				
Strength			Specific Power						Main				
Endurance			Specific						Main				
Speed			Mixed						Max				
Micro-Cycles	40	41	42	43	44	45	46	47	48	49	50	51	52
Testing Dates			●			●			●			●	
Medical Control Dates													

Volume



SUMMER MICROCYCLE

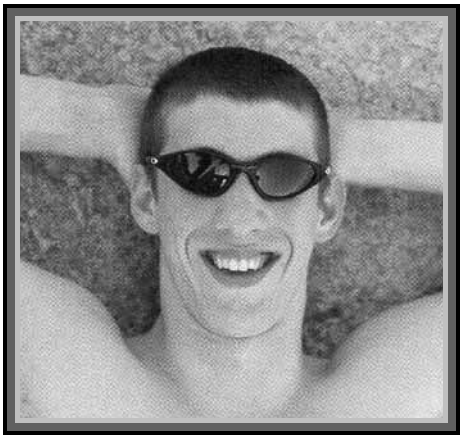
	Mon	Tue	Wed	Thu	Fri	Sat	Sun

AM	POWER MD-6000 Dist-7000	ENDURANCE MD-8000 Dist-9000	QUALITY MD-7000 Dist-8000	TECHNICAL MD-7000 Dist-8000	ENDURANCE MD-8000 Dist-9000	MIXED MD-7000 Dist-8000 DL-Barrowman	TECHNICAL All-6000
PM	QUALITY MD-7000 Dist-8000 DL-Barrowman	TECHNICAL MD-7000 Dist-8000 DL-Barrowman		POWER MD-6000 Dist-7000 DL-Barrowman	TECHNICAL MD-7000 Dist-8000 DL-Barrowman		
SCHOOL YEAR MICROCYCLE							
	Mon	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**	**Sun**
AM	POWER MD-4500 Dist-6000		TECHNICAL MD-4000 Dist-6000		POWER MD-4000 Dist-6000	MIXED MD-9000 Dist-10000 DL-Circuit	TECHNICAL All-6000
PM	QUALITY MD-7000 Dist-8000 DL-Med. Ball	ENDURANCE MD-8000 Dist-9000 DL-Circuit	QUALITY MD-7000 Dist-8000 DL-Abs/Flex	ENDURANCE MD-8000 Dist-9000 DL-Med. Ball	TECHNICAL All-7000 DL-Abs		
MD = Middle Distance; Dist = Distance; DL = Dry land							

LEARN FROM THE OLYMPIANS

ONE-ARM BUTTERFLY DRILL

By Michael Phelps
Photos by Michael Aron
Reproduced from SWIM, March/April 2003



At the ripe old age of 17, Michael Phelps has established himself as America's greatest all-around male swimmer – Uncle Sam's answer to Ian Thorpe.

In 2000, just barely past his 15th birthday, he became the youngest man to make a U.S. Olympic swim team in almost 70 years. In Sydney, he improved his time in prelims, semis and finals, and finished 5th in the 200m Butterfly.

By 2001, he was ready to take command of his event, lowering the world record at the U.S. Nationals in April while he was still 15, then taking it down to a stunning 1:54.58 while winning gold at age 16 at the World Championships. At year's end, he was named **Swimming World's** *male American Swimmer of the Year.*

Last year Michael came of age, blossoming out to other events and displaying an amazing versatility.

At the U.S. Nationals in Fort Lauderdale in August, he broke Tom Dolan's world record in the 400m Individual Medley, clocking 4:11.09. For good measure, he set American records in the 200m IM (1:58.68) and 100m Butterfly (51.88), becoming the second-fastest man in history in each event.

At the Pan Pacific Championships – the year's biggest meet – Michael won three gold and two silver medals. His 51.13 Butterfly split on the world record-setting U.S. Medley Relay (3:33.48) was the fastest in history. Once again, he was named **Swimming World's** *male American Swimmer of the Year, and was just barely edged out by Thorpe for World Swimmer of the Year honours.*

Training harder than ever, Michael hopes that all that he has accomplished thus far is only prelude to what he will achieve this year and next at the Athens Olympics.

Here Michael shares his favourite drill ... the ***One-Arm Butterfly Drill****.*

Drills are an essential part of my training. I do **at least** 400 yards or metres of drills at every workout. Typically, I do 300-400 stroke drill and sometimes a 400 IM drill.

My favourite drill – and one I do every day – is the One-Arm Butterfly Drill. This drill renews my feel for the stroke and is a constant reminder of how Butterfly should be done.

I started doing this drill when I was much younger and it's something I have grown up with and have just kept doing. (Coach) Bob (Bowman) thinks it enhances my feel for the water and teaches me to keep my hips in rhythm with my stroke.

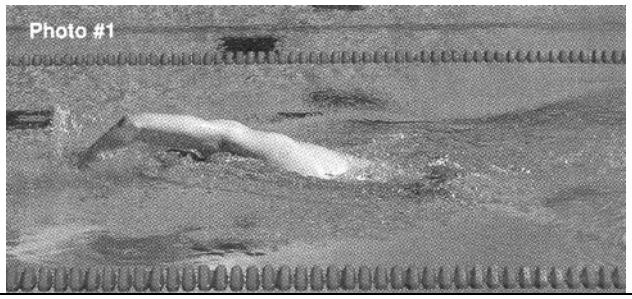
When I do the drill, I concentrate on three things... keeping my stroke long ... making sure my hips are high, riding the surface ... and

kicking hard every time. I never drop my legs and there is no time during the drill when I am resting. The movement is exactly the same as when I am swimming Butterfly, except that I am stroking with one arm instead of two and breathing to the side instead of out front.

Sometimes I alternate – one stroke left arm – one stroke right … at other times I will do two or three strokes with each … still others, I will alternate one lap with each arm.

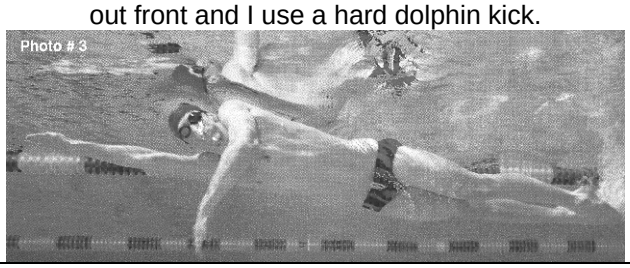
Over the years, I have learned that whatever I do in practice will show up in a meet. So it is important that my stroke in practice is perfect – my hips are high and I keep a strong, steady kick going.

The drill begins as, stretched out, my left arm enters the water.

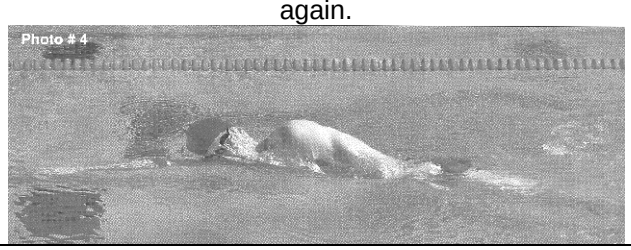


Staying streamlined, I dive under the water, hips held high.

Breathing to the side, I pull straight back with my left arm, keeping my elbow high. My right arm remains out front and I use a hard dolphin kick.



I push all the way through with my left arm and kick again.



Remaining streamlined, I recover my arm and prepare to enter the water again and take another stroke.