



Guest Editorial - Brian Drew - ACF Veteran Commission 1995-1996

## Masters Cycling

**Question:** Will Masters Cycling in Australia ever be consolidated as one body under the umbrella of the governing body (Australian Cycling Federation)?

### The Problem:

For too many years there has been an ongoing battle between two cycling groups; one predominantly based in Victoria and formed from ex-pro's and the other the rest of Australia under the banner of the ACF.

For too long the two bodies have conducted parallel events including Australian championships held on different dates at different times and the result has been to the detriment of Masters Cycling in Australia. Predominantly the issues surrounding the amalgamation of the two bodies is focused on individuals. That is, people with a personal agenda have failed to come to the negotiating table and arrive at a sensible and agreed decision on the structure and administration of Masters Cycling in Australia.

The summary of the facts surrounding this particular issue are as follows:

### The Facts:

At present there are two cycling organisations within Australia.

1. The ACF (Australian Cycling Federation)
2. AVCC (Australian Veteran Cycling Council) incorporating the VVCC (Victorian Veteran Cycling Council)

The majority of cyclist are registered with the ACF with veteran racing being administered on behalf of the ACF on a state by state basis by the various state cycling organisations affiliated with the ACF.

In the state of Victoria the Victorian Veteran Cycling Council (VVCC) administers a second group of veteran cyclist, some of whom may carry dual registration with the ACF in order to participate in ACF (VCI) sponsored race series.

In the past the ACF had experienced some difficulties with the management of the VCI in Victoria. These difficulties had, to a large extent, prevented the setting up of a combined commission consisting of representation from both VCI and the VVCC registered clubs. The intention was that this particular commission would represent all Victorian veteran cyclist and that it would present an opportunity to set aside all prejudices past and present and get on with providing services required by veteran cyclists registered in Victoria.

"We should be able to compete as a single body national sport. We should be able to draw representatives from this national sport to represent the country.."

### The Fix:

The alternate proposal is to establish a national commission which administers and provides certain services to state based commissions to expand and consolidate veteran cycling throughout Australia. This commission would be administered by the ACF but would consist of representatives from various state bodies including the VVCC. A mandate of the commission would be as follows:

1. To draw up racing guidelines suitable for the conduct of veteran racing throughout Australia from Club to national competition level.
2. To educate coaches that are conversant with the needs of mature age cyclist.
3. To plan and conduct seminars to instruct mature age cyclists on training protocols, looking after their body and general health matters related to aged competition and participation.
4. To liaise with the ASC on the development and integration of cycling into the various Masters events conducted each year within Australia. To establish a set of guidelines and administrative policies for the conduct of racing in a safe and professional way, perhaps incorporating two categories - (1) is an advanced category of license holders registered with the ACF and (2) a novice category of perhaps first and part-time participants so that cyclists of varying skills are not placed

together in an environment where accidents can occur.

5. Encourage participation.
6. Provide gender equity.

### The Goal:

Why should sport be political? Particularly with mature aged people who, apart from being interested in their own health and progression of a sport which they may have enjoyed in their youth, should have the right to participate in national programs without the interference of administrators with personal interest. They should be able to support and contribute to the youth of the sport through their various clubs and state associations, again without interference from parties with personal or vested interest.

We should be able to compete as a single body national sport. We should be able to draw representatives from this national sport to represent the country in various international Masters events. We should provide an umbrella licensing and insurance scheme and above all as mature age athletes we should participate primarily for the benefits of camaraderie and our health.

In the absence of the willingness of certain parties to come to the negotiation table it may be that Masters cycling in Australia will not be a single entity until the old guard finally passes on, unable to participate and no longer able to carry old prejudices!

## Editorial

Hello to all our readers

This issue sees the introduction of 'What's Hot' - aimed at examining controversial or "new on the scene" issues or topics.

We recently went out to Rubyvale for the annual wheelbarrow race - an 18k run with a pick, shovel and 15kg stone. The male and female winners won \$1000 plus a \$500 sapphire ring donated by the Rubyvale Gem Galley. Peter came second in the Veterans and won a lovely sapphire now sitting on my finger. It was a great weekend with displays, bonfires, music and lots to eat and drink. One competitor, and local miner, Peter Chalmers, ran the race in his workboots because he couldn't find shoes big enough to fit him. Peter and wife Debbie dig their mine by hand - see the ad on page 10. Stay well, train hard and race tough.

Peter and Claire

## THE MASTERS ATHLETE

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# Recovery Strategies

© by Dr Peter Reaburn

**T**raining hard and training smart are not always the same thing. Once you've done the hard work, there must be a corresponding adaptation to the hard work. This adaptation takes time - recovery time. Too many masters endurance athletes seem to ignore the formula for success: **Work Hard + Recover Well = Best Performance**



Peter Reaburn

Many athletes work hard but often ignore recovery activities except when they are ill or injured, yet these recovery practices are an essential ingredient in a balanced training program.

Planning appropriate recovery activities as part of the training program accelerates adaptation to the training by reducing the time it takes for an athlete to reach the overcompensated state referred to in Figure 1.

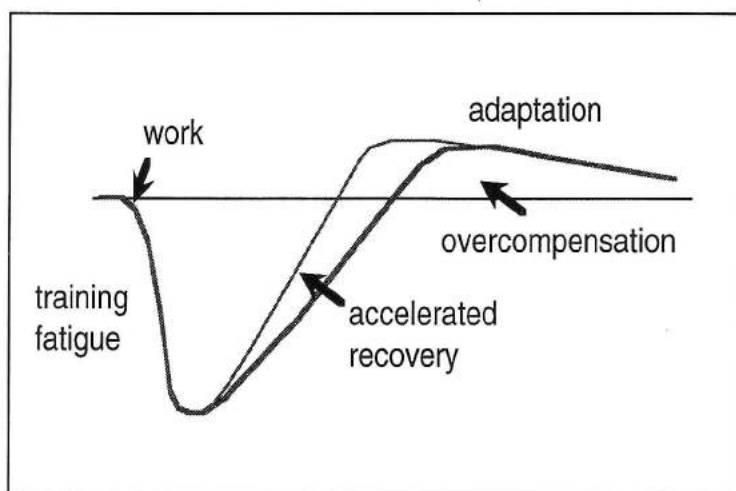


Figure 1: Accelerated adaptation through accelerated recovery.

## Recovery Strategies

### Passive rest

Sleep is the most important form of passive rest. A good night's sleep of seven to nine hours provides invaluable adaptation time for us to adjust to the physical and emotional stressors experienced during the day. For masters athletes with stressful careers, getting to sleep can sometimes be difficult. Here's some tips on developing good sleeping habits.

1. Practise relaxation techniques before going to bed. (relaxing music, muscle relaxation, breathing exercises, reading/visualisation)
2. Lie down to sleep only when you are tired.
3. If you don't fall asleep within 30 minutes after turning out the light get up and do some relaxation work (Point 1).
4. If you wake up in the night and can't go back to sleep follow Point 3.
5. Get up at the same time each day.
6. Avoid the following before bed:
  - i. Caffeine (eg. coffee, tea, coke, chocolate)
  - ii. Nicotine
  - iii. Alcohol
  - iv. High protein meals

v. Reduce thinking and worrying in bed. Meditation, flotation, reading or listening to relaxing music are other forms of passive rest. Some of these are readily accessible to all athletes but a few are restrictive because they require special training or are quite expensive.

### Active rest

Active rest is greatly undervalued by athletes. Warming down after a hard session aids recovery. Cross training can often be used as a form of active rest provided the work intensities are light, and the exercises undertaken are different to those normally performed in training. Pool work either walking

or swimming, particularly backstroke and side stroke, are excellent modes of active recovery after hard training or racing.

Rest days are essential. At least one day per week should be a nontraining day.

### Fluid and fuel for recovery

Replacing fluid and fuel stores used during training is essential. The optimal time for replenishing carbohydrate

stores is within the first hour following exercise. The recommended intake is 1g of carbohydrate per kilogram of bodyweight per hour. We should drink to match sweat rates and this can be monitored through urine checks (clear urine is ideal) and pre- and post-training weighing (1kg lost = 1 litre of fluid).

The following checklist may help to maximise recovery:

- After each training session
  - \* Drink & eat
  - \* Walk / move (at least 5 minutes)
  - \* Stretch
  - \* Hot / cold shower
- Evening / end of day
  - \* Hot / cold shower / spa / sauna
  - \* Stretch & self massage (especially legs)
  - \* Practise relaxation 10 - 15 minutes before bed

\* (Music, progressive muscle relaxation, visualisation, breathing exercises)

### Physical Therapies

#### Hydrotherapies

Water therapies are much underused and undervalued in Australia. Showers, spas, baths, float tanks and saunas, provide ideal

environments in which to stretch and perform self-massage. Contrasting hot (1-2 mins) and cold (10-30 secs) showers, or using a warm spa with a cold plunge pool provides an increase in muscle/skin circulation, and nervous system stimulation. Pressure from jets and shower nozzles enhance muscle relaxation by stimulating light contractions in muscles.

### Sports massage

Massage has two major physiological benefits. Firstly, massage can increase blood flow which enhances the delivery of oxygen and nutrients to tired muscles as well as promoting the removal of metabolic by-products. Secondly, the warming and stretching of tissues provides temporary flexibility gains. There are also psychological benefits as tired and tight muscles relax there is a corresponding improvement in mood states. Athletes feel less fatigued and more relaxed.

### Summary

The principle of recovery is the most frequently forgotten training component and the most poorly understood of all the training principles. Try some of the ideas above. If they work, hold onto them; if they don't, forget them.

## The Team

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# Segmenting: Races, Sessions and Seasons

© by Wendy Swift

**A** runner is lined up for the start of a 10 km race. He feels fine and is keen to achieve his personal best time.



Wendy Swift

The gun goes and he is off and racing, the first kilometre floats under his feet, he settles into pace but soon notices that his legs have that familiar tired feeling. He is not yet half way and starts talking to himself - "There is so far to go... I didn't expect my

legs to be hurting this much... I must have gone out too hard" - coming up to the 7 km mark and he is really hurting now, he slows his pace and starts wondering how much further to the finish line - "this race is not that important anyway... there is always next season... I'll be better prepared by then". If this scenario is familiar to you then segmenting events is a simple technique that may improve your performance.

Segmenting is the process of identifying separate parts of a race, focusing on a task or goal to be achieved in each part, and applying other mental skills of positive self talk and cue words to these tasks. It is a technique that can also be applied to training sessions and competition seasons to enable you to maintain your motivation and get the most out of your training.

**To incorporate segmenting into your racing, use the following steps :-**

**Step 1.** Identify the segments,

**Step 2.** Identify the task of each segment and come up with some thoughts that focus attention on accomplishing that task.

**Step 3.** List some cue words to link in with the task of the segment

**Step 4.** Develop a list of positive self statements for each segment.

Our 10 km runner identified three segments in his race :-

**Segment 1-** the first 4 kilometres, from the start to the second drink station.

**Task** - conserve energy

**Thoughts** - to stay loose and relaxed and not expend unnecessary energy

**Cue words** - floating; light as air

**Positive talk** - my technique is good, going exactly to plan

**Segment 2** - the second 4 kilometres, from the second to the fourth drink station.

**Task** - to ignore the pain and maintain pace

**Thoughts** - I am a machine that doesn't feel the pain, hold the pace steady!

**Cue words** - strong, endure, steady

**Positive talk** - I've prepared for this, my goal is within reach

**Segment 3** - the last 2 kilometres, to the finish line.

**Task** - hold technique together and finish strongly

**Thoughts** - long stride, steady breathing,

**Cue words** - drive, power, strength

**Positive talk** - nearly home so work the last bit, it's worth it!

It is important that the number of segments is small enough to be remembered, and should be well rehearsed in training.

Segmenting is also useful for getting the most out of training. When faced with a long season many athletes find they have periods of low motivation, or fatigue. This is especially true in sports where the off season is the build up for the next competition season and no real rest time is taken. Mental fatigue can be just as damaging to performance as physical fatigue and injury. By breaking the season into segments that each have a specific task or goal, competitors can maintain a fresh approach to their sport.

"SEGMENTING IS THE PROCESS OF IDENTIFYING SEPARATE PARTS OF A RACE, FOCUSING ON A TASK OR GOAL TO BE ACHIEVED IN EACH PART, AND APPLYING OTHER MENTAL SKILLS OF POSITIVE SELF TALK AND CUE WORDS TO THESE TASKS"

A triathlete has 15 weeks before an Olympic distance triathlon championship.

She has started to miss training sessions because the weather is still cold and it seems like there is still so long to go. She justifies these missed sessions to herself by saying there is still plenty of time to make them up later. She could improve this situation by segmenting the 15 weeks into 3 or 4 separate time periods. The longest period she now focuses on is just 4 weeks. Her tasks for each time period could include perfecting a technique, covering a certain number of kilometres or reaching a time trial goal. She could also set herself a challenge of making at least 85% of all sessions within a period and reward herself with a spending-spree or an extra day off if she achieves this goal. Because each segment is much shorter than the entire 15 weeks, our triathlete finds it is easier to maintain the focus and quality of her work outs.

Individual training sessions can also be broken into segments with the goal of gaining optimum quality from each session. Training can sometimes be long, boring or difficult. Try identifying several different segments within the session. If you are cycling you may separate the hills from the flats, or land marks on a loop course, or an hour ride can be segmented into 3 x 20 minute blocks. Once again, follow

the same steps as set out for racing. The tasks may focus on correcting the weakness you have noticed in your training. There may be a certain period of a session where your technique falls apart, or where you have noticed that you regularly succumb to fatigue. Use the thoughts, cue words and positive talk to help you work through these.

Segmenting is a simple mental technique that can help you maintain appropriate concentration, effort, physical technique and motivation that should lead to a better performance. If any part of your competition season, training or racing, seems insurmountable, break it down into smaller pieces and tackle them one by one. Your goals should once again become achievable.

## From the Research

### Resting Heart Rate - Does it Change?

For years we've always believed that resting heart rate getting lower was a sign we're getting fitter. But recent research suggests the changes in resting heart rate are minimal following endurance training. Forty seven healthy, non-athletic people (26M, 21F) aged 17-63 years did a 20-week training study. They cycled three days a week, for 30-50 minutes at between 65 and 85% of their maximum heart rate. Heart rates were measured during sleep, during complete rest, before exercise, and during a standard easy cycle. The results appear below:

Variable	Before	After	%Change
HR during Sleep	59.8±7.8	57.9±8.1	- 3.2
HR during Rest	60.1±8.0	57.4±7.1	- 4.5
HR before Exercise	75.1±12.0	74.3±10.4	- 1.1
HR during Exercise	126.6±20.4	110.4±14.7	- 12.8

As we can see, the actual change in resting heart is small in both actual heart beats and percentages. However, significant changes were seen when exercising at the same speed on the bike - a whopping 16 beats per minute or 12.8% drop. The results strongly suggest that resting heart rate may not be that sensitive a marker of training effectiveness. What appears to be a better marker, is the actual heart rate at any particular swim, ride, run or row speed.

Wilmore, J.H. et al (1996) Endurance exercise training has a minimal effect on resting heart rate: The HERITAGE study. *Medicine and Science in Sports and Exercise*. 28(7), 829-835.

# Run Training for the Multi-Sport Athlete

© by Dr Colin Solomon

**A**s a competitive event, distance running is typically performed as a single-discipline. The main difference between run-only and multi-discipline events such as triathlon is that the run is part of a longer-duration event. The multi-discipline running training programme must be designed with this fundamental difference in mind.

## Multi-Discipline Events

In events where the run section is first, the run itself will only be slightly effected. However, as the majority of the event is to follow the run, pacing during the run is critical. An experiment conducted by C. Hausswirth and others compared three 45 min running situations all performed at the same speed: 1) Triathlon: following a 30 min swim and 60 min cycle; 2) Marathon run: last 45 min of a 2.15 min run; and 3) Run-only. The energy cost of running, and the concentration of plasma free fatty acids (an indication of fat metabolism and low carbohydrate energy stores) was higher for the 45 min run section of the Triathlon and Marathon as compared to the Run-only. Also, C.Y. Guezennec and co-researchers compared 10 km runs for either 1) Triathlon: following 1.5 km swim and 40 km cycle; and 2) Run-only. The Triathlon run resulted in higher oxygen consumption, air breathed, and heart rate, a larger decrease in body mass and blood volume, and an increase in plasma fatty free acids, as compared to the Run-only. These results indicate that there is a decrease in mechanical and metabolic (energy) efficiency when the run is performed following approximately 90 min. of exercise. This decrease in mechanical and metabolic functioning during the run section *must* be addressed in training.

## Common Training Principles

The common principles of all exercise training apply to run training for multi-discipline events; specificity, progressive overload, alternate high and low intensity sessions, alternate short and long duration sessions, build an aerobic base prior to moving into power or speed phases, and taper for competition.

### Specificity:

Multi-discipline event run training must be specific to the event, in regard to duration, intensity, and environmental conditions (terrain, temperature). The type of sessions performed can be the same as would be used for the same distance run-only event (refer speed section below).

### Programme Balance:

Instead of the "once per day, seven times a week" running programme used by runners, a triathlete could still use the same number of sessions (7), but divide them into twice per week each discipline and one session incorporating all three disciplines. Alternatively, once a week per discipline, and four sessions using two of the three disciplines. The controlling factor is to maintain a balance and not to do significantly more in one discipline simply because it is more interesting or easier.

Specific physiological de-training can occur within 2-6 weeks of training reductions or cessation, and therefore re-training will be required to return to peak performance. The most efficient way to maintain function in a specific area is to maintain the intensity (as opposed to the duration) of the training in that discipline.

For the majority of aerobic (endurance) exercises there will be a large transfer of central (heart and lungs) adaptation across the various disciplines. This can be used to advantage for training variety, or during injury. However, as local adaptation (muscles, local oxygen transporters) are exercise-specific, discipline-specific training is a must.

THE COMMON PRINCIPLES OF ALL EXERCISE TRAINING APPLY TO RUN TRAINING FOR MULTI-DISCIPLINE EVENTS; SPECIFICITY, PROGRESSIVE OVERLOAD, ALTERNATE HIGH AND LOW INTENSITY SESSIONS, ALTERNATE SHORT AND LONG DURATION SESSIONS, BUILD AN AEROBIC BASE PRIOR TO MOVING INTO POWER OR SPEED PHASES, AND TAPER FOR COMPETITION.

### Aerobic (Endurance) Training:

Given the longer total duration of multi-discipline events (as compared to the run section distance run as a single event), the training programme must be designed to physiologically prepare the athlete for the run in the context of the total event. The programme must include long-duration (90 min +) low-intensity runs, every 1 or 2, or 2 of 3 weeks. Many multi-discipline athletes choose to do the long-duration (aerobic) sessions in a discipline other than running in order to decrease the change of injury and over training. In this case, runs must be done as part of a session following another exercise. For example: a 2:00 hr run could be replaced with a 1 hr cycle and a 1 hr run. Not only will this provide the necessary duration stimulus, but will also provide event-specific transition and sequence training.

### Speed:

Speed training sessions can be designed as a function of race pace. Training must be targeted at the pace you anticipate running for the

run section of the event, not at the individual run pace for the distance run alone. The same speed sessions that are used for run-only training can be utilised (eg. for a 10 km run: 6 x 1000 m, 10 x 400 m, or 20 x 200 m) with the adjustment to the slower race pace. The programme must also use sessions where speed intervals are incorporated into a longer session involving at least one of the other disciplines. For example: 20 km cycle - 2 km run (easy) - 6 x 400 m runs - 2 km run (easy).

### Transitions:

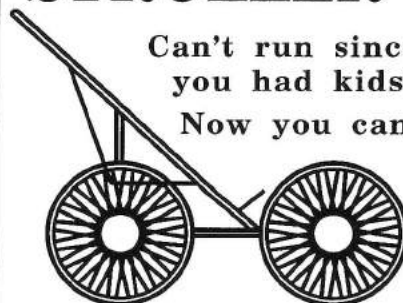
Transition training is necessary to prepare for the move from one muscle group or breathing pattern to the next. Again, the training should be specific. Using the same pre-run discipline(s) that will be performed in the event, divide this and the run distance in half and combine these into a single training session. In addition, multiple transitions can be used to concentrate on a specific transition. For example: for a 4 km run-20 km ride-4 km run event, a transition session could be 500 m run-3 km ride-500 m run. Remember, specificity is the key to good multi-sport racing. Good racing.

"LET THE SMOKERS AND GLUTTONS DIE.... AND LEAVE THE LIVING TO US WHO KNOW HOW TO USE IT"

PERCY CERRUTY (1895-1975)

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# Clearing the Air or Clearing the Room?

© by Dr Peter Reaburn

**S**melly (or stinking!) feet are like bad BO - everyone, especially your partner, knows you've got it except you.

## Where does the smell come from?

Foul feet are due to bacteria that fester in the warm and moist environment within your shoes, particularly those running or cycling shoes. Once your hoof goes into that shoe, the bacteria move onto your feet to grow and multiply. The major culprits that cause the stench are corynebacteria and micrococci. This means that shoe inserts or pleasant smelling talcum powders, while helping keeping spouses happy in the short term, will do little to solve the stench in the long term.

## Here's some tips!

The bacteria thrive on warm and moist roundings so do your best to eliminate such iditions. The following ideas can help.

### 1. Washing and drying your feet

Scrubbing your feet with antibacterial soap such as *sapoderm* when showering or having a bath will help. Between the toes is a favourite hiding spot of the critters so ensure you get in there and dig 'em out with the soap and scrubbing brush. Drying the tootsies, again

concentrating on between the toes, helps prevent moisture staying on the feet when you put on the socks and shoes. Some dermatologists suggest even using a hair drier on the feet to ensure dryness. Use them in private please and don't brush the hairs on the toes!!!

### 2. Products

a) Antiperspirants such as underarm deodorants containing aluminium chlohydrate or aluminium chloride will help decrease moisture. The spray deodorants are easiest to apply but ensure you protect the ozone layer and stay away from those fluorocarbons.

2) Believe it or not, a dermatologist in a highly respected sportsmedicine journal has recommended soaking the toots in tea as a possible help.

3) Benzoyl peroxide (5% or 10%) gel may help decrease bacteria.

4) Some prescription only drugs such as erythromycin 2% solution twice a day

### 3. Footwear

Wearing absorbent socks such cotton will help absorb moisture and prevent a nice moist

and warm breeding ground for the bacteria to develop and multiply. Changing your socks regularly will help. If you wear them more than once, dry them and your shoes out well in a dry and / or well ventilated spot.

Shoes that allow airflow into them will help keep the insides dry.

It also helps to go barefoot or wear socks or sandals by themselves around the house or when taking it easy. This will allow the feet to stay dry and prevent a warm and moist environment for the bad guys to breed.

### 4. The last resort

Apart from coping with regular abuse from the partner, chopping off the offenders, wearing a gas mask or hanging the feet out a window downwind, the last resort is a visit to a dermatologist or sports podiatrist who will have a wealth of experience in coping with this often embarrassing complaint.

Stay toey or get some soul!

## Athlete Profile

Name: Sandy Webb

Age: 43

**Sports/Events:** swimming, triathlon

**Occupation:** G.P. (with particular interests in obstetrics and sports medicine)

**What do you enjoy about masters sport?** The masters swimming "fun, fitness and friendship" about sums it up.

**What motivates you to participate?**

I know how fat, lazy and decrepit I'd be if I stopped.

**How do you keep yourself motivated?**

I enjoy training - it's a great stress-beater, and I'd rather train than race. However, upcoming events do tend to make me work harder.

**Favourite training session:**

Long aerobic sessions. Hate sprints!

**How often do you train?:**

I plan something every day, and the days when I can't due to commitments at work become the rest days.

**Do you train under a coach, with a group of friends, or by yourself? Why?**

All of the above, but mostly with groups of friends, if I can manage to arrange it, because it's fun.

**Other interests/hobbies:**

Reading, sleeping. Particularly sleeping. The garden, our children. Did I

mention sleeping??

**Your most memorable moment in sport:**

Finishing my first triathlon - it was a beautiful day, the water temperature was just right, what could be better?

**Your most memorable moment in life so far:** Happens every time I'm

present at the birth of another human being.

**Favourite book:**

This changes weekly - depends on what I've just finished reading.

**Favourite 'bad' foods:**

Chocolate. (Of course, I never touch the stuff.)

**Favourite 'good' foods:**

Bread, fruit, veges - I could go on....

**Philosophy on life:**

You ask some tough ones, don't you? Really, I just wake up every morning and it's there....

**Advice to masters athletes wanting to improve:** Keep working on it. Nobody

really knows what you can do 'til you try. Enjoy.

**Other Comments:** Keep printing The Masters Athlete, I enjoy reading it.

Happy training.

"AGE IS STRICTLY A CASE OF MIND OVER MATTER. IF YOU DON'T MIND, IT DOESN'T MATTER."

JACK BENNY

## What's Hot

### "Hooter Strips" - What's the go?

by Dr Peter Reaburn

Most of us have seen swimmers, runners, triathletes and footballers wearing the new *Breathe Right External Nasal Dilators* - those little strips that go across the bridge of the nose to supposedly enhance performance by opening up the nostrils. The marketers suggest this enhances performance by increasing oxygen usage, aids recovery, and make breathing easier. So what does science say about these very attractive claims? Forget them is what science says and here's the proof.

### Performance

In the USA, five recreational cyclists were recently laboratory tested to exhaustion on three occasions - once with the "hooter" strips, once with a piece of tape, and once without anything on the snoz. Here's the results:

	Max Vol Air (L/min)	O <sub>2</sub> (ml/kg)	Breathe Rate (/min)
Breathe Right	126.3±5.7	37.0±5.5	55.6±7.1
Piece of Tape	127.1±6.9	37.8±4.4	58.0±4.5
Nothing	135.1±6.4	38.5±6.1	57.6±6.1

The results suggest, if any difference at all, that no strip on the hooter will get more air in. Furthermore, there appears no performance benefit in being able to take in more oxygen. So much for the marketers

Continued on Page 8

# Biomechanics In Rowing - Part 1

© by Tim Kerrison

**B**iomechanics is the sub-discipline of sports science concerned with the physics of movement. The biomechanics of rowing is typically concerned with the interactions between the rower, the boat and oars, and the environment (water and air). Biomechanics is increasingly used in rowing to serve two main purposes - *Performance Optimisation* and *Injury Prevention*.



Tim Kerrison

The *Performance Optimisation* side of rowing biomechanics addresses issues such as technique, equipment design, rigging, and racing strategy, and how each of these factors can be used to optimise boat speed over the racing distance.

The *Injury Prevention* perspective of rowing biomechanics looks at ways in which technique and rigging (including choice of equipment) can be used to prevent common rowing injuries such as stress fractures of the ribs and lower back injuries.

## Technique

If you've been rowing for a while you have probably encountered a number of different theories as to what the 'best' rowing technique is. Biomechanists have been studying for decades to try to answer this question. Questions such as *What is the best way to apply force to the oar throughout the drive phase?*, *What is the best way to move up the slide on the recovery?*, and *What is the best sequence of movements of the body parts throughout the stroke?* In this issue we will focus on the application of force on the oar handle through the drive phase. Although biomechanical testing will be beyond the means of most masters rowers, an understanding of some of the principles behind these concepts will arm you with the knowledge required to improve your rowing stroke.

## Force Application

The way in which force is applied to the oar throughout the stroke is something we can all control and which can greatly affect the boat speed. You may have heard many coaches talking about an 'accelerated' drive phase as being the best way to row, with a light catch and a gradual build throughout the stroke. We will briefly examine why this may be a desirable way to row with reference to the biomechanics involved.

## Force Curve

By appropriately instrumenting a rowing boat or an ergometer we are able to measure the forces applied to the oar-handle throughout the stroke. The force applied to the handle through a single stroke can be graphed against the distance through which the oar has traveled, as seen in Figure 1 which also shows the speed at which the oar handle travels, relative to the boat, during the drive phase.

The area under the force curve represents the amount of work done by the rower on the boat (or ergo) in one stroke. In general, the

greater the area under the curve, the more work is done on the boat to propel it forward. However, if we apply a large amount of work at the catch, and then lighten off through the middle of the stroke and towards the finish (see Figure 2), we can do the same amount of work (i.e. same area under the force curve) but with less effect on boat speed.

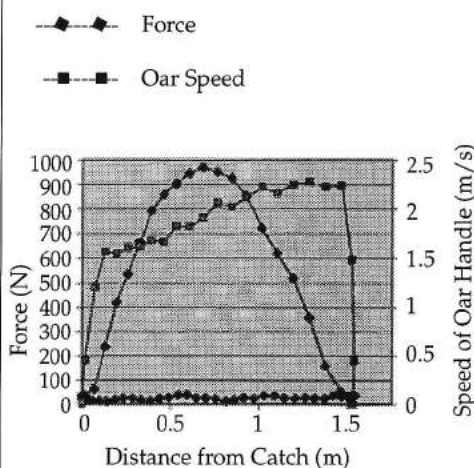
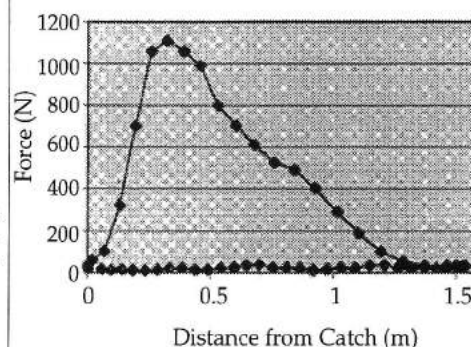


Figure 1: The Force Applied to the Oar Handle and Speed of the Oar Handle throughout a single stroke, expressed as a function of distance from the catch.

Figure 2: A Force Curve demonstrating early application of force, possibly by effecting the catch with too much body and shoulder movement.



This is because at the catch a large amount of the force applied through the oar to the water is directed outwards and is not propulsive (see Figure 3(a)). During the middle of the drive phase, when the oar is close to the 'square off' position, almost all of the force applied to the handle propels the boat forward (Figure 3(b)), while at the finish position some of the work we do is directed inward (Figure 3(c)).

Continued on Page 8.

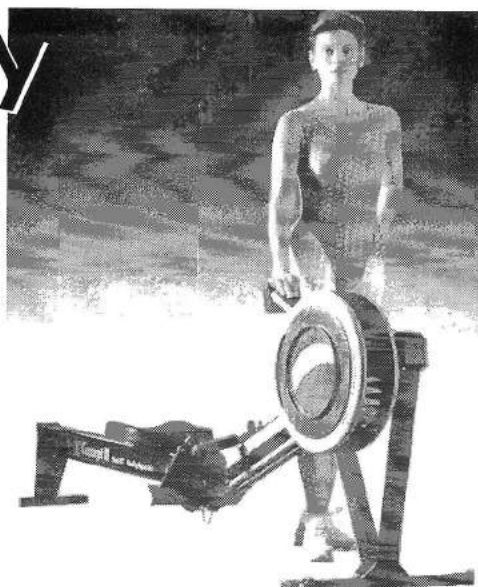
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# Off Season Swim Training

© by Rod Porteous

**T**he aim of this article is to outline activities which will maintain aspects of fitness in the 'off season' while, at the same time, focusing on specific points for continual improvement.

The aim of the "off-season" is to allow the body to recuperate in readiness for the next competitive season. Once you've had a break for say 2-4 weeks, it is time to think about improving next season's PB by specifically dealing with any weakness in your fitness.

Fitness can be simplified to the 5S's -

## STRENGTH, SPEED, SUPPLENESS, SKILL, STAMINA.

There is interaction between the 5S's of fitness. Strength is needed to develop speed and improves stamina. It has been my experience that the majority of masters swimmers, especially the older and female, lack strength or are diminishing strength levels.

Suppleness or flexibility is required to improve skill. Strength, suppleness, and skill improve speed and stamina. The lack of suppleness can be seen across all ages of swimming again more so in the older swimmers. *How can these declines in stamina, flexibility and strength be addressed during the off season?*

### ■ Strength

Resistance training (weights) is the best method to improve strength. Ensure that the Coach/Instructor is qualified in this area (eg. Australian Strength and Conditioning Association) before commencing resistance training.

Perhaps the simplest and easiest resistance equipment for masters is stretch cords. These are available from several suppliers in various resistance levels and are not cost prohibitive. They can improve strength, speed and stamina. Be careful to duplicate stroke patterns as it is easy to pick up faults.

### Stamina

Should you be fortunate enough to have pool access year round, continue swimming at a level that will maintain base fitness, ie 70% to 80% of maximum heart rate. To make next year's training a little easier, do at least one hard session per fortnight.

The unlucky ones without pool access need an activity that will elevate their heart rate to the 70-80% zone for at least 20 to 40 minutes.

Cross training on any form of ergometer with a heart rate monitor and stop watch is also recommended.

My favourite is the combination cycle (arm/leg), though swimmers who do not coordinate alternating arm/leg well may look at the new double arm/leg machines (freestyle and backstroke are alternating arm action, breaststroke, butterfly are double arm action).

Running is arguably one of the best exercises for basic conditioning, although some of us do not possess the physiology to be runners - walking at a brisk pace is the next best thing. To add sports specificity to the workout, finish these sessions with stretch cords.

### ■ Suppleness and Skill

As a coach, I have tried to improve the technique of my club swimmers with varying degrees of success. Those with good flexibility improve and those with poor flexibility do not.

When was the last time you looked at your posture - more importantly the position of the shoulders and hands in relationship to the trunk?

Modern day practice of sitting for long periods slowly develops incorrect posture. The classic stance is rounded shoulders, head forward, the points of the shoulders in front of the chest with the palms facing the front of the legs. Sound familiar?

This posture limits stroke mechanics. A classic sign in the pool for freestyle and butterfly is the palms facing the water as the hands lead the recovery phase.

Breaststrokers looked hunched over side on, with rounded shoulders front on.

Backstrokers tend to lead the recovery with the elbow and bent arms. The hands are moving apart over head before entering the water. In extreme cases the entry will be almost square to the trunk.

Correction of posture during the off season may be the biggest single contributor to swim improvement.

What needs to be done is to get the shoulders in correct alignment with improvement to the thoracic spine (upper back) curve.

This is achieved by dropping and pulling in the shoulder blade, straightening the upper back, and stabilising the hips.

### Dropping and Pulling in the Shoulder Blades

To reverse the rounded shoulders, stretch the pectoral muscles at the front of the chest.

Strengthen the rhomboids, lower trapezius, general erector spinae, and spinal stabilising muscles - the muscles that pull the shoulder blades towards the spine.

Reverse fly's in the gym with light or heavy weights will help strengthen these muscles as will lying face down on the floor, arms out by the side, palms down and doing little lifts of the hands off the floor.

### Thoracic Spine (upper back) Curve

To improve the thoracic spine curve, roll a towel to a comfortable diameter, lay face up on the floor with the towel across your back. Place your hands overhead, arms straight, back of the hands on the floor. This will feel like giant hands are pulling the rib cage apart.

Start with the towel at the lower middle of your back holding for 30 seconds then move the towel up a couple of inches and repeating the stretch. Repeat these steps until reaching a point between the shoulder blades then reverse this sequence to the starting point.

### Pelvic (hip) Stabilisation

The object of pelvic stabilisation is to tighten the abdominal muscles.

The exercise required to do this is to lie flat on the floor and try to feel like the lower back is pressing against the floor.

When stabilisation has been mastered you should be able to lift your legs off the floor, without losing the pressing feeling of the lower back against the floor.

On closing I would like to thank The Masters Athlete editors for the opportunity to contribute to the continued improvement of masters swimming.

Rod Porteous is Director of Coaching (Nth) for Qld Masters Swimming.

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## Rowing continued from Page 6

The amount of work we do which actually propels the boat forward is the *effective* or *propulsive work*. In order to maximise the percentage of the total work we do that is *propulsive*, it is desirable to achieve high forces during the middle of the stroke, close to the 'square off' position, where most of the force is propulsive. If we apply too much force early in the stroke, as in Figure 2, then much of the work we do will be directed outward and we will be doing less propulsive work on the boat, therefore resulting in lower boat speed for the same effort. This situation may arise from using too much shoulders and body at the catch. It is important that the catch is effected initially by the legs only, so that maximum force can be generated during the middle of the stroke (near the effective square off position) by using the legs and body together.

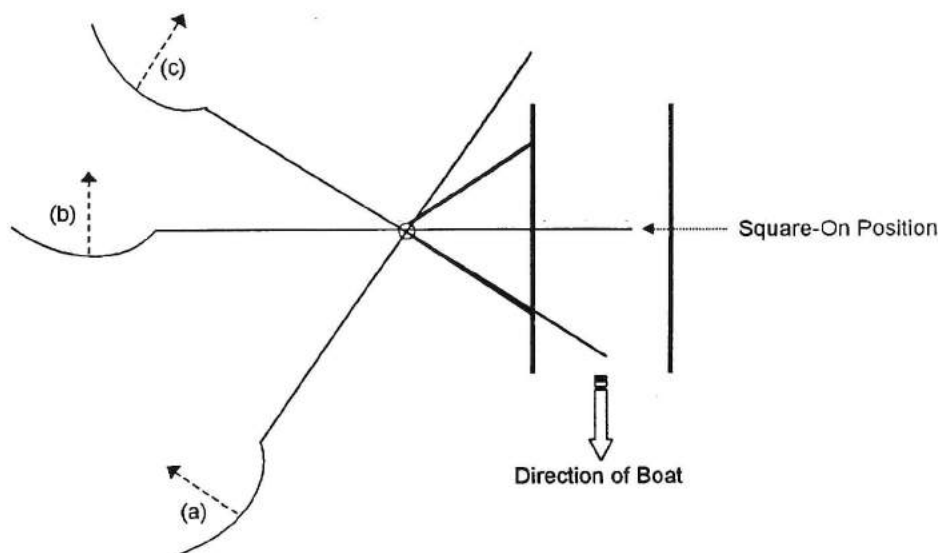


Figure 3: Top view of a boat and oar in three positions throughout the stroke; a) at the catch, where most of the applied force is directed outwards, b) at the 'square-on' position, where all of the force is propulsive, and c) at the finish, where some of the force is directed inwards.

## Handle Speed

At the catch, it is imperative that the blade quickly 'picks up' the speed of the water (or the flywheel on the ergo) after it is placed, as the blade must be going at least as fast as the water to exert a propulsive force. If we do not pick up the speed of the water the blades will 'check' the boat, and the boat will be slowed dramatically. This is why in faster boats (say an eight) we have to be a bit quicker with the legs at the catch than in a slower boat, like a pair.

In Figure 1, which is real data collected on an ergo, it can be seen that the speed of the flywheel is picked up in about one tenth of a second (data points are four hundredths of a second apart).

Once the blades are travelling as fast as the water, we can start applying some real force - but if we try to do too much we will simply

'tear' through the water, pushing water past the boat rather than leveraging the boat through the water. This is another reason why we must gradually build the pressure through the stroke, rather than trying to do too much in the front part of the stroke. During a good stroke, the handle will increase in speed right throughout the stroke. In Figure 1 it can be seen that the handle gradually accelerates right through to the body. It is only in the last 5cm, as the handle approaches the body, that it starts to slow down so it can change direction. Be careful not to hit the body with the oar handle though, as this will prevent a smooth back-turn.

## Applying this knowledge

People often tell me that biomechanics has little practical application in rowing unless you have thousands of dollars of sophisticated equipment to play with. In reality, just about all technical aspects of rowing are based on

biomechanical principles. Next time you hit the water you can think about the way you pick up the water at the catch, the way in which you apply the force on the oar handle, and the way you accelerate the handle right through to the body and **understand** why it is necessary to do these things in the way you have (hopefully) been taught. I am a strong believer in athletes being able to perform better if they have a strong understanding of the principles underlying performance, and I am sure that through an understanding of these biomechanical principles of rowing you will be able to further your own rowing performance.

*Tim Kerrison is a sports scientist and rower. He runs a private sport and exercise consultancy in Brisbane and trains a number of rowers via correspondence. He can be contacted on 07-3378 8760 for professional advice.*

## What's Hot from page 5

claiming increased oxygen and performance.

## Recovery Enhanced

The marketers of these strips again claim increased recovery from hard work as a result of more air and oxygen. Wrong again! Nine, 23 yr old youngsters sprinted for 30 seconds on a bike on two occasions - once with the strips and once without. Power output, fatigue, oxygen used during recovery, and air volumes during recovery were all identical in each condition. The only difference was that the sprint without the strip actually produced more total work.

## Breathing is Easier

The marketers of the nasal strips argue that the strip makes you feel as if breathing is easier. Hmm! Research again suggests this to be marketing hype. Researchers at Illinois State University asked five cyclists who did a test to exhaustion which felt the easiest out of the nasal strip, a piece of tape, or nothing. Two chose the piece of tape, two liked nothing on the nose, and only one cyclist liked the nasal strip.

Let the results speak for themselves. While the strips might make you look like an athlete and maybe psyche out those without them, those of us in the know think they're just another marketing ploy by companies out to make a buck!

## Question and Answer

1. Reader and triathlete Lynne McGregor asked why she hyperventilates and gets short of breathe when racing? I suggest there are two major reasons. Firstly, warm-up may not have been long or intense enough. If you want to race fast, you need to warm up fast (same as race speed) close to the start of the race. Secondly, if you are fit, your breathing adjusts quickly to exercise. Therefore, training to improve endurance fitness will help. Getting out of breath on the run may be due to the fact you don't train to get off the bike and run. Every time you ride the bike in training, get off the trusty steed and jog / run around the block or further. You'll find your body will get used to this, making bike to run transitions easier.

2. Reader and runner, Ian Colledge asked a question sports scientists are still trying to answer - "Why are my muscles sore after a race?" The consensus of opinion here is that the tiny muscle fibres within our muscles have been damaged and this damage stimulates pain receptors within our muscles. The only real way to prevent or limit this pain is to train at both the distances AND intensities we plan to use in racing. If you plan to run a half marathon, you must have covered that or very close to that distance in training. If you plan to run the half in 1hr 50min, you must have done either shorter runs or, even better, intervals at that pace or faster in training.



# 10 Tips to Surviving the Simpson Desert Cycle Classic

© by John Brannock

**L**ast issue (April 97) the Guest Editorial by Race Organiser Rod Townsend was about the Simpson Desert Cycle Classic. Each year about 50 masochists participate in the race to raise money for the Paraplegic Benefit Fund (PBF). This article is written by one of the participants and gives tips on surviving the race.



John Brannock

## 1. Develop specific desert fitness

Be mindful of the fact that over 300 kilometres of sandriding is required (of the total distance of 580 kilometres) which is quite hard work. Consequently regularly cycle along the beach or along sandy creek

beds. At least ten x two hour sessions are necessary to equip you for the desert. Also practise jogging uphill/downhill on a sand dune with the bike on your shoulder or learn to push it in front with both hands on the seat.

A high level of endurance fitness is required so read past TMA articles on endurance training and be capable of at least running a marathon or its cycle equivalent; you will need this ability each day! Some strength training will also assist in many respects.

## 2. Practise MTB skills

As there are many grooves and bumps in the track, learn to bunny-hop and dodge rocks. the "gibber" section of the desert requires skilful handling so practise bounding over rocks. As some sandhill tracks are quite hard-packed, train leaning back over the MTB and peddling quickly to attain good speeds downhill (on hill 487 or there-a-bouts, I clocked 72 kilometres per hour which helped me plough through the inevitable sand patch near the base).

Learn to fall off the MTB at slow speeds - I happen! Practise balancing in sand also.

st sand riding is quite daunting at first, try using the very lowest gears and use a high cadence.

## 3. Take the right gear

Include lightweight, long sleeve, light coloured shirts - old business shirts are OK. take a helmet neck-cover (Arabian style), goggles (for the inevitable sand storm), powerful sunscreen (over 45 SPF if in Europe or USA - such as water-based Banana Boat Ultra 4 hour resistant 180 grams). the idea is to cover as much of your body as possible with clothes or sunscreen.

While the temperature can rise to well in excess of 40 degrees Celsius by mid morning, each day commences near zero degrees so take a tank top to dispense with near the start. In order to reduce chaffing between the legs, use a skin shammy cream (Keywin or similar).

## 4. Prepare the mind

Prior to the event, talk to past participants, watch their Classic videos, and be prepared not to finish all sections (not many do!). If you complete the distance, treat the feat as a bonus.

During the race, you may not see another

rider for many hours, so play "count the seagulls or crows on sand-hills" to distract from the loneliness. When you see the dead camels, just imagine they died of disease (actually, the drought was the cause). Find someone of similar ability and draft each other and talk if you can.

## 5. Hydrate, hydrate, hydrate

During training, practise drinking water to excess - it's not unusual to consume 10-15 litres of water on an average hot day in the desert. With camel backpacks, you can sip regularly so try to make it a habit.

If you have access to a wind trainer, simulate desert conditions by closing all windows, rug up, turn the heater on, cycle for 2 hours or so and drink as much as you can. Commence hydrating heavily at least 3 days before the event.

During the event, the golden rule is **drink water whenever you're not changing gears or eating**. Over-indulging is preferable to the alternative. (If you need a drip during the race, you are disqualified). Sip from the camel-backpack whenever off the bike (at night or walking around at lunch). Due to the extreme heat for great distances, only use electrolytes at one third of recommended dosages. At each 20 kilometre water stop, finish off each water bottle and camel-backpack - it's worth the few minutes lost.

"...be capable of at least running a marathon or its cycle equivalent; you'll need this ability each day!"

## 6. Eat, Eat, Eat

Read the TMA article (Issue 3 Oct 95) on high glycemic foods and stock up on them. Carbo-load from two days before the race and carbo-load at every opportunity during the five days, particularly at lunch. You won't feel like eating much at midday but you need carbohydrates more than ever.

Energy bars are easy to eat while riding, and towards the end of the morning or afternoon sessions, glucose (jelly beans, lollies) will get you over the last 20 kilometres. In every third water bottle, use a high carbo (>75%) food supplement that doesn't curdle in the heat.

Practise eating high glycemic foods and food supplements in training to ensure stom-

ach compatibility. A variation of the golden rule is **eat** whenever you're not changing gears or drinking.

## 7. Know your bike

Learn to change a tube quickly as punctures occur regularly and no assistance is allowed. However, tube liners (like Mr Tuffies) and Tyre Weld help prevent annoying blow-outs. In preference to a slim-line racing seat, soft gel seat will help your battered butt. If you can afford it, dual suspension is a blessing, though know their faults and how to fix them.

## 8. Pace Yourself

Some elite riders and potential place-getters go hard over the first dozen or so dunes only to find there are 800 of them to conquer. Don't burn yourself out during the mornings as the afternoons are scorching (above 45 degrees Celsius last year).

## 9. Prevent nerve damage

A common complaint of riders (particularly masters) is carpal tunnel syndrome (or hand nerve damage) caused by tightly gripping the hand-grips for extended periods. The secret is to loosen the grip regularly and extend and shake the fingers every few kilometres.

I failed to heed the warning and am still suffering!

## 10. Enjoy the scenery

The Simpson Desert is spectacular, one of the driest deserts on earth but has an abundance of wildlife. Read up about it from the internet or library and recognize the birds and lizards. This helps to take the mind off the pain.

## Conclusion

An over-riding tip, however, is take a competent, caring and supportive back-up crew who can massage, maintain your bike, force-feed you and do it all with a smile.

The Cycle Classic is an event that neither I nor my team will ever forget. The forged friendships, the awesome environment, the pain, and the challenge are elements which make it a lifetime experience.

*Fifty year old John is currently Queensland Masters Mountain Bike champion Cross Country and Uphill. As a masters athlete he has run many marathons (including New York under 3 hours) and over 60 triathlons and biathlons. In his youth, John represented Australia in Karate and Queensland in both weightlifting and judo. John completed the Simpson Desert Cycle Classic last year on his first attempt and raised \$20,000 in sponsorship for the Paraplegic Benefit Fund.*



## From the Research

### Water Running - does it really work?

The purpose of this study was to see whether deep water running could be used as a substitute for on-land running in maintaining on-land running performance and aerobic capacity. Eleven (10M, 1F) competitive (19 minutes for 5k) runners aged 32±5 years trained with only deep water running 5-6 times per week for four weeks. 5k run performance, anaerobic threshold, aerobic capacity and anaerobic threshold measures were done on a treadmill before and after the four weeks of deep water running. No changes were observed in any of the parameters measured before and after the deep water run training. The results strongly suggest that deep water run training can maintain on-land 5k run performance and can maintain the important endurance performance factors.

*Effect of four weeks of deep water run training on running performance.* Bushman et al. *Medicine and Science in Sports and Exercise* 28(5), S191, 1996.

## Get Set!

### Calendar of Events

#### October 19-27 1997

##### Honda Masters Games

Alice Springs, NT

Contact: (08) 89515330

#### October 18-19 1997

##### Aussi Masters State Swim Champs

Perth, WA

Contact: (09) 4418249

#### October 24-Nov 1 1997

##### 6th Australian Masters Games

AIS, Canberra, ACT

Contact: (06) 207 9097

#### October 28-30 1997

##### Masters Rowing Regatta

Canberra, ACT

Contact: (06) 2758883

#### March 12-14 1998

##### Aussi National Swim

Hobart, Tas

Contact: (08) 344 1217

#### June 21-30 1998

##### World Masters Swim Champs.

Casablanca, Morocco

Contact: (08) 344 1217

## THE 6TH AUSTRALIAN MASTERS GAMES

### More than a Sporting Event

In glorious Spring colours Canberra will host the Healthpact Sixth Australian Masters Games, from 24 October to 1 November 1997. The games will be the greatest sporting event for masters athletes this year and the most spectacular event in Canberra ever! With 31 sports, all played on first class facilities and an extensive social program, participants will test their stamina both on and off the court.

The best aspect about the games is that whatever your standard there is something in the program for you. All competitors from beginners through to elite athletes will be welcomed and embraced.

General manager of the games, Sue Baker-Finch, said participating in the Healthpact Sixth Australian Masters Games will be the pinnacle of Australian masters events as the games will celebrate the tenth year of Australian Masters Games.

"This is a great milestone in masters sport and I believe Canberra will be the perfect location to celebrate. Sports and the games staff are working closely to organise and deliver a first class event. Registrations are rolling in so I am confident we will break the 10 thousand participant mark," Baker-Finch said.

One feature of the games will be the quality of sporting facilities participants will compete on. Canberra can justifiably lay claim to being the home of sport in Australia with the Australian Institute of Sport (AIS) and other world class sporting facilities located in and around the city. The modern design of Canberra with social and sporting venues no more than 10 minutes from each other lends itself to hosting major sporting events.

Not to be outdone the games social

program is certain to keep competitors entertained. "When competitors register for the Healthpact Sixth Australian Masters Games they can expect first class competition and so much more. The social program is a block buster with exclusive access to opening and closing ceremonies, a gala dinner, a rock and roll night and a jazz night," Baker Finch said.

What you should know.

The only qualifying standard for the games is age - you must be of masters age for your sport. (Ring the games hotline to find out what masters age is for your sport.).

The games are not just a sporting event, but a unique sporting festival where competitors from over Australia and overseas join together in sport. Your games fee not only provides you with a first class competition but exclusive access to opening and closing ceremonies, midweek entertainment and you will also receive a backpack loaded with goodies.

If you finish in the top three in your age group in your sport you will win a beautifully crafted medal. All competitors will receive certificates.

How do you enter?

Phone the **games hotline (06) 2079097** and you will receive more enticing information on the games, a list of sports and an entry book.

Look around your masters aged (for most sports over 30) friends, family and work colleagues and enter a team, or may want to enter as an individual team sports or in individual events.

Post in your entry before entries close **August 15 1997** and start training for a truly great event!



## Did You Know?

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- \* \$15,600 while the Boston Marathon is being run.

### BUT

will have to earn this income for 270 years to match Bill Gates' net worth.

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# Clothing And Equipment For Racing And Training

© by Greg Reddan

**C**hoosing equipment and clothing for each leg of a triathlon is as important as training. However, the choice is difficult due to the large numbers of manufacturers, the controversies about what is most suitable, the range of costs, the constant changes in design, and the individual needs of the triathlete. Over the years I've witnessed a variety of clothing and equipment used in training and racing and will try to provide some tips that may be useful.



Greg Reddan

## SWIMMING

a) *Swim-suits*. Lycra fits more closely than nylon but is not as durable. After a while the material loses its elasticity as a result of cycling, and will cause drag in the water. Keep a check and replace them when necessary.

When you find a brand and size that suits you, stick to it. Women are best advised to wear the two-piece type as they are much cooler for cycling and running in warm weather. You may be able to purchase a suit with extra material in the crotch which may be more comfortable in the longer cycle races.

Rinse your suit with fresh water after each use, handwash with soap after every fourth wearing and drip dry in the shade (as the sun causes fading and damage to the lycra).

b) *Goggles* protect your eyes from the chlorine or salt and aid your underwater vision, allowing you to see your hands and arms and avoid collisions in pools. However, they are prone to leak, fog and can be uncomfortable.

Fit is important and there is no method other than trial and error. To prevent leaking, adjust the rubber head band around the back of your head and the centre strap over your nose. Compress the lens against your face for a more secure fit.

c) To prevent fogging, you can use spit, fogging compound or contact lens cleaning solutions—always wipe away the excess chemicals. I prefer not to wear goggles in races up to 2 km as they tend to alter your normal vision, fog up or even get knocked off-line at the start. If you can get used to closing your eyes when your head is down and opening them when you breathe, it allows you to sight buoys and judge distances more accurately. If you have to catch waves in a surf situation, goggles can be a real problem as well.

d) *Caps* can improve your speed by reducing drag, particularly for those with longer hair. Caps also assist in preventing hypothermia as we lose 30% of heat through our heads. In very cold water, two caps can be worn or better still one made from wet-suit material (2-3mm). Ensure such a cap has a continuous strap, rather than a velcro join, as they tend to chafe badly. Try to air dry your cap between swims or use talcum powder to keep the sides from sticking together. Test your cap out well before the start - I remember one race when I had trouble opening the cap and tore it in frustration right before the start. I had to rush back to

the organizers to get another!

e) *Wet-suits* increase buoyancy considerably and improve your speed due to less drag as you sit much higher in the water. They reduce your 1500m time by 1-2 minutes, with slower swimmers benefitting more. They also keep you warm and prevent hypothermia. Most races allow age-groupers to use them for safety purposes as well in mass starts.

f) *Hand-paddles* can assist in ensuring good technique throughout the stroke in training. The latest Skate 3000 brand designed by Olympic coach, Scott Volkens, use a curved surface much like a human hand. They teach you to lengthen the stroke and maintain pressure throughout. Use them two or three times per week and watch for any signs of tendonitis in the shoulder, especially if your technique or shoulder strength is weak.

g) *Pull-buoys* are useful to provide buoyancy, allow you to concentrate on your stroke and improve your upper body strength. Remember to allow your shoulders and hips to roll freely as this action may be restricted by the pull-buoy.

h) *Flippers* are excellent for developing ankle flexibility that is essential in the kicking action. Many triathletes lack flexibility in the calf and ankle area and 500m with flippers at the end of a session will help overcome this problem. Remember not to kick too vigorously or the muscle may cramp and go into spasm. Flippers also help the quadriceps muscle and make butterfly much easier, which is useful for developing strength.

i) *Kickboards* provide support when doing kicking drills. Although kicking is of limited

use to most triathletes who use a two-beat kick, the primary advantage of kicking drills is to improve ankle flexibility. I have seen some master's triathletes who cannot move at all when kicking due to limited ankle flexibility. Thus, the combination of kickboards and flippers is advised.

## CYCLING

a) *Bicycle frames and equipment* have changed so radically over the years that it would be pointless to make suggestions. My advice would be to visit a reliable local bike-shop and make sure you are measured for correct frame size and positioning. When selecting a frame, you will need to consider your size, goals, level of experience, personal riding style and dollars. Ask other triathletes about servicing, as it should be a major consideration in your choice of bike-shop.

b) *Clip-on cycling shoes* provide a smoother and more economic cycling action, especially in hilly terrain. They also allow you to unclip your feet quickly in emergencies transition. Ensure they are set up correctly by an expert.

c) *Cycling nicks* are available in many fabrics and colours, but basically should be black to hide the dirt and grease stains. They should be tight-fitting and have a chamois or padded crotch to provide comfort on those long training rides (or races). Tights keep your legs warm in winter and should have a foot stirrup that can be used in colder climates for cycling and running. However, usually they do not come with a chamois or padded crotch and should be worn over the nicks.

Continued on Page 12

## SKATE 3000 Hand Paddles

Designed by Scott Volkens

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*Scott Volkens*  
1995 & 1997 Australian  
Coach of the Year  
1992 & 1996 Olympic Coach

The **Skate 3000** (Large) is ideal for use in stroke correction sets of 50s, Endurance Sets, Recovery Sets and you could build up to using them in Power Sets, but the ideal combination would be to use them in conjunction with my medium version **Skate 3000** which is ideal for Sprint and Quality Sets as well. The **Skate 3000** (Small) has been designed for Juniors and strong Butterflies.

Once the Coach watches their swimmer using the **Skates** and sees the differences in technique, they'll realise there is no comparison. Technique must come first with all of our swimmers and therefore we must only use swim aids that do enhance at least some part of stroke mechanics.

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### Triathlon continued from Page 11

d) **Cycling tops** have pockets in the back which are useful for carrying food, spares, tools and money. You will need short-sleeved for summer and long-sleeved for winter. Cotton tops are much cooler or warmer than lycra which is usually used for advertising purposes and less comfortable. I remember cooking in the bike leg in Hawaii after some cyclists advised me to wear a lycra top for its streamlining. In hot races I would suggest wearing a white cotton running singlet that can be tied tightly at the back (with a rubber band) for the cycle and then loosened easily to provide ventilation in the run leg. In winter you will also need another light weight top to provide extra warmth if the temperature is below 10 degrees. This should be a bright or fluorescent colour to attract motorists' attention. A reflective safety top should also be worn if you are cycling in the dark.

e) An Australian approved *bicycle helmet* is essential for your safety and also to be able to compete in sanctioned events. Try to select one which is bright in colour and provides good ventilation. Stick reflective strips to your helmet to help you to be seen.

f) **Cycling gloves** are like shock absorbers for your hands. They provide riding comfort and will protect the hands from abrasions in a crash. They can also be useful for checking your tyres for road glass and gravel whilst in motion.

g) **Sun-glasses** reduce glare, even on over-cast days and allow you to relax your eyes and facial muscles, which in turn relaxes your neck and shoulders. They also reduce damage to your eyes caused by UV rays so ensure you purchase good quality which do not have to be expensive.

h) **Indoor trainers** are useful training aids in winter and also can be used during summer for specific strength and technique training.

### RUNNING

a) **Running shoes** We all have different feet and problems so we need to experiment until we find the shoe that fits! Any reputable running shoe store can help you, but you will need to consider: your overall size and weight, your weekly running volume, whether the shoes are

for racing or training, ankle support, cushioning required and individual quirks. If you have special problems, you may need to see a podiatrist. Remember to replace training shoes regularly as they lose their cushioning and support and make you susceptible to injuries when worn-out.

b) **Singlets** should be light-weight and made from cotton-polyester to absorb moisture without sticking to your body or becoming heavy. They should be loose to allow perspiration to flow off your body by using large holes to provide evaporative cooling. In hot weather (or after you have warmed up) you may prefer to remove the singlet. Women should wear a firm-fitting bikini top in such conditions to allow maximum skin evaporation.

c) **T-shirts and skivvies** can be used for warming-up or in cold conditions. They need to be loose to provide freedom of movement and avoid restriction by tight seams.

d) **Waterproof suits** are useful for running in poor weather. Goretex is a fabric which allows water vapour to pass out, but does not allow water to pass through from the outside. This lets perspiration escape while keeping the

rain out and the athlete dry. These are also very useful in cycling.

e) **Socks** absorb moisture and provide comfort, preventing foot and shoe odour and blistering. Generally training socks are thicker, whilst racing socks are thinner to give the athlete a feeling of lightness. I think it is worth the time to put on socks in a race if the run is 20 km or further for the extra comfort they provide.

g) **Elastic laces** allow a quick transition to the run but ensure they are tucked in after tightening with a toggle. If they flap around, you could easily trip and come down with a thud!

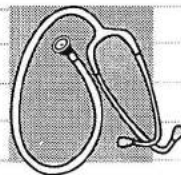
h) Finally, **jock supports and sports bras** provide more support and reduce the chance of chafing which can be very painful and affect performance, especially in long races.

Now you have got the gear and you are all dressed up, go get 'em.

**"When you help someone else up the hill, you reach the top yourself"**

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