

Setting you straight on Intersection Syndrome

Chris Milne, doctor to the (Olympic) Stars sets us straight on Intersection syndrome; an all too common rowers ailment.

Intersection syndrome is one of the three most common injuries in rowers (the other two being stress fractures to the ribs and lower back problems).

What is it?

It is an inflammation of two of the extensor tendons to the thumb, as they pass over the main extensor tendons to the wrist.

What causes it?

This is an overuse injury, so the more training you do, the more likely you are to get the problem. There are also technical factors to do with feathering of the oar that may need correction.

How is it diagnosed?

If you feel a pain just above the wrist and it is painful to move the wrist back and forth, you probably have intersection syndrome. You should go and see a doctor who deals a lot with rowers. He or she may notice a grating (called crepitus) when you move the wrist. An ultrasound scan can confirm the tendon swelling, but it is not usually needed to make the diagnosis.

How is it treated?

It is treated with an ultrasound guided injection of corticosteroid to the affected tendon sheaths. This will need to be organised by a specialist if you have ACC cover. Your doctor should phone the specialists rooms and explain the nature of the condition if you wish to avoid a long wait to see the specialist. A week or two after the injection, you should be able to get back into the boat

and also do erg training. If you are subject to drug testing, the injection must be notified to the NZ Sport Drug Agency and to FISA.

How do I prevent a recurrence?

It is worth sitting down with your coach and looking at various factors that may have contributed to your injury. Any technique faults should be corrected.

What if I do get a recurrence?

If the pain does not settle after the injection, you may need to have surgery. This involves decompression of the affected tendons and is highly successful. The chance of recurrence after surgery is virtually nil.

Dr Chris Milne

Front line Poll

Composite crews - Great idea or rubbish idea?

- Do composite crews give more opportunity to rowers?
- Do composite crews weaken racing by creating 'stacked' crews?
- Do composites give a region more opportunity to win medals?
- Do composites create better opportunities for some regions than others?
- Does the opportunity of composite crews make clubs stronger or weaker?

Send your comments to alison.storey@xtra.co.nz

Common Foot Problems

It's that time of the year again. Your coach has asked you, an athlete who chose a water sport, to do some running training - on land. You know it's not your favourite activity, but if you want to do your best at Nationals, it's a necessary phase of training.

For the rower, whose strength is on the water, the land holds some particular challenges for the feet. These two often neglected appendages to the legs are frequently a source of pain. Here are a couple of the common foot problems that arise from running:

PLANTAR FASCIA STRAIN: The plantar fascia is a thick band of tissue that runs forward from the bottom of the heel bone (calcaneus) towards the toes. It can be put under excess load, especially if you are a big crew member with flat feet. Symptoms include pain under the inner side of the base of the heel bone which gets worse as you keep running, and pain first thing in the morning, or on getting up from a chair. Treatment includes ice, massage, and strapping to support the foot. In the longer term, you may need to consult a podiatrist (foot specialist) and get some orthotics to support your feet. Ask the podiatrist which models of running shoes are best for your feet.

STRESS FRACTURE OF THE METATARSAL NECK: The metatarsals are the bones that your toes are attached to the end of. As you run, they are under repetitive load. If this load exceeds the capacity of your bone to adapt, you may suffer a stress fracture. Usually this affects the neck of the second, third, or fourth metatarsal. The most common symptom is localized bony pain about 3cm back from the knuckle joint (MTP) joint of the affected toe. If there is no change on an x-ray, a bone scan may be needed to confirm the diagnosis. Treatment is via rest from running for

about 6 weeks - go cycling instead, then back on the water.

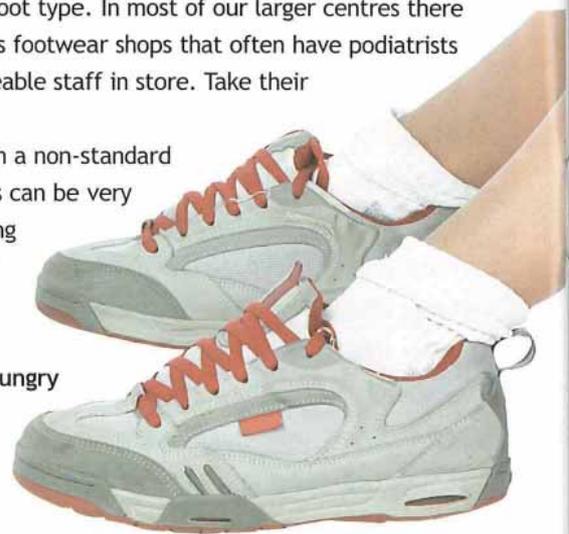
BLACK TOE: When we go running, out toes are repeatedly hitting the inside of the front of our shoes. If the toe box is too small, this may result in bleeding under the toenail. If you have ever had one of these (called a subungual haematoma) you'll know how incredibly painful they are. Go and see your doctor and get the blood clot drained and the pressure will be released immediately. The pain will also settle down just as dramatically. In future, buy shoes that are half to one size bigger, and trim any extra long toenails back.

BLISTERS: These are an inevitable consequence of extra friction between your foot and the inside of the shoe. Get the most comfortable shoe you can, wear well cushioned socks, and trim your toenails to avoid pressure areas.

PREVENTION OF FOOT INJURY: This is always better than cure. There are three simple bits of advice: Increase your training load gradually, as you would on the water. Buy running shoes that are designed for your foot type. In most of our larger centres there are specialist sports footwear shops that often have podiatrists or other knowledgeable staff in store. Take their advice.

For those of us with a non-standard foot type, orthotics can be very helpful in preventing and managing foot injuries.

Happy running training, and get hungry for the on-water phase letter. Dr Chris Milne.



Rib Stress Fractures

By Dr. Chris Milne

Rib stress fractures are one of the three most common injuries suffered by rowers.

Why do they happen? Mostly it is because of the large volumes of training done by our top rowers - if you take a paperclip and bend it enough times, it will break. Also, the technique of rowing has a part to play. In the rowing stroke all of the force from the blade must be transferred through the arms to the body to propel your boat forward. Where the shoulder girdle muscles attach to the ribcage there are several points which act as stress risers. Usually these are under the arms in the region of the 5th, 6th, 7th or 8th rib. Occasionally, they can be around near the spine.

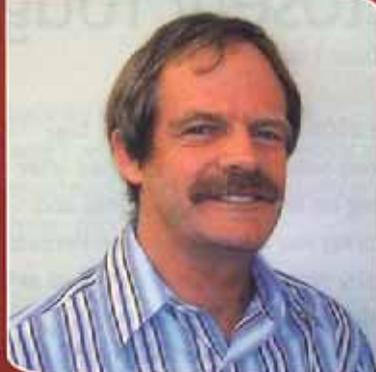
What can be done to prevent them?

Firstly, pay attention to the advice from your coach regarding technique. Your coach is an experienced observer and can give you tips on your form during different phases of the rowing stroke. You may have heard of computer-based programmes (e.g. Silicon Coach).

These are useful but they are not a substitute for the keen eye of an astute coach.

Secondly, you should only gradually increase your training volume through the build up period. If you are rowing properly you can go for over 200 kilometres per week without getting a stress fracture, however the body needs time to adapt to this big volume. During this time, the body's muscles and bones become stronger and can better handle the load.

Finally, if you do get localised pain in your chest wall, do not let this go on for more than a few days. If it does not settle, mention it to your coach and get to see



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a doctor who is experienced in rowing injuries. If your own doctor is unsure about the diagnosis, he or she can refer you to a specialist, as a bone scan may be needed to sort out the problem. Treatment of rib stress fractures involves attention to many factors and will be the topic of my next article. ➤



Testing the blood of rowers

Which blood tests are of value in rowers and when should they be used? Sports physician Dr Chris Milne looks at the blood testing that he has been performing on the summer squad rowers over the past few months.

There are three main indications for blood testing in endurance athletes such as rowers:

1. At entry to a training programme to exclude deficiency of iron and occasionally other nutrients.
2. When an athlete is unwell and cannot train.
3. When an athlete is having difficulty adapting to a training programme.

Firstly, at entry to a training programme, it is a good idea to exclude iron deficiency. The recommended blood tests are a complete blood count (CBC) and ferritin. Together these blood tests give a good indication of the iron status of an athlete. If the ferritin is below 30 (more common in female athletes on account of menstrual periods) then the athlete should see their doctor and get a prescription for iron tablets. Usually ferro-gradumet is prescribed.

I don't recommend over the counter tablets containing iron as they are not very strong. Iron injections are rarely required.

If there is a family history of coeliac disease or vitamin B12 deficiency, then a check of the B12 folate and red blood cell folate levels is a good idea.

Female athletes should have their blood count and ferritin levels rechecked every 6 - 12 months.

Secondly, if a rower becomes unwell and cannot train their doctor may organise blood tests. These may well include a complete blood count, to check for an elevated

white cell count, and also the C-Reactive protein (CRP). CRP is a protein that is elevated in cases of significant infection or other illnesses, for example some types of arthritis. If it is elevated the athlete should not train.

When the rower improves and his or her resting pulse rate is back to near normal levels, it is usually safe to return to some light training.

Finally, if a rower is having difficulty adapting to a training programme a check of the Creatine Kinase (CK) blood level can be helpful. CK is an enzyme that is present in muscles.

When muscles are overloaded it leaks out into the bloodstream. 'Normal' levels of CK in people who don't train are up to about 220 units per litre. For athletes in heavy training they may climb up to 500 or higher in the first few weeks of a new programme. It is rare for them to exceed 1000, but if this happens the doctor should recommend that the athlete back off their training for a week or so.

This is a good time to collect other data such as the athlete's weight and resting pulse rate. Also, I like to get an indication of how the athlete is feeling generally and, more specifically, their enthusiasm for training. These can both be assessed on a one to ten scale. Then the coach can look at the data and modify the athlete's training accordingly.

As you can see there are a few selected blood tests that can help in athlete care.



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However, the most important information is how the athlete is feeling generally and how they are performing on the ergometer and, most importantly, on the water. ➤

Low back pain in rowers

By Dr. Chris Milne

The low back is one of the three most commonly injured body parts in rowers (the other two are the ribs and forearms).

Why do rowers get back problems?

Mostly, it is because of the huge loads put through the back with rowing training.

Laboratory studies have found that this equates to 6,000 Newtons, which is a heck of a lot of force (students, just ask your physics teacher).

Given that the training is needed to achieve top performance, what can we do to prevent back injuries? Firstly, try to maintain the normal curve in your low back throughout the rowing stroke. Studies by Duncan Reid, former chief physiotherapist to New Zealand rowing and Olympic Games teams, have shown that maintaining the normal curve (the lumbar lordosis) is very important.

How best to do this? Firstly, imagine that you are sitting in a chair with a cushion behind your low back or in a car with the lumbar support feature activated in

the driver's seat. The curve achieved by these interventions is what you are trying to achieve when training and racing. Secondly, keep your hamstring muscles flexible. For most of us this will require hamstring stretching exercises. Ask your physiotherapist or coach about these. Some exercises can be done on your own and some (the PNF stretches) are best done with a training partner. Keeping your hamstrings flexible has been shown to reduce the rate of wear and tear on the discs in the low back.

The final piece of advice is to take care when lifting. This includes care when taking your rowing shell in and out of the water and on and off of the trailer. Bend your knees so as to minimise the stress on your low back. ➤



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Treatment of rib stress fractures involves attention to many factors and will be the topic of my next article. ➤



Forearm tendon problems with rowers

By Dr. Chris Milne

One of the three most common injuries in rowers is caused by tendon problems just above the wrist. It is so common, it is sometimes called oarsman's wrist. The medical name is intersection syndrome as it occurs where the tendons that extend the thumb cross over the bigger tendons that extend the wrist.

What causes it?

Most times it is caused by repetitive movements in training.

What does the rower notice?

There is pain from about 5-10 cm above the wrist on the radial (thumb) side of the forearm. Later you may develop swelling and a grating sensation on moving the wrist up and down.

What does the doctor find?

Usually there is an area of swelling where two of the tendons that extend the thumb cross over the other tendons. The area is tender to touch. On moving your wrist up and down the doctor may find crepitus - a raspy grating sensation.

How is it managed?

The rower should come out of the boat if symptoms have been present for more than a few days. They can continue with off-water training including cycling, running and lower body weight-training. If there is grating present, or the pain does not settle within a few days, I recommend referral for an ultrasound scan with consideration of

an ultrasound-guided local steroid injection. This injection should dramatically reduce the pain and swelling within a few days. Those athletes subject to drug testing need to fill in a TUE (Therapeutic Use Exemption) form and get this sent to Drug Free Sport New Zealand.

At that stage the rower can go back in the boat. Rowing with the oar square all the time for the first week or two may also assist in recovery. In the longer term, teaching the rower to rotate the oar by rolling the fingers rather than twisting the wrist is likely to help. Occasionally the condition may recur. If this happens, it is worth sending the rower to an orthopaedic surgeon who is experienced in performing a decompression procedure. Recovery from this procedure takes two to three weeks and then the athlete can restart rowing. I have not seen any recurrence of the problem in rowers who have had decompression surgery.

In summary, these wrist problems are common but treatable. As they relate to on-water training, the secret is to identify them early and manage them actively. Modifying technique can bring long term benefits.



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Winter recovery - what you need to know

So you've got through this season and have resolved to do even better next year. But there's the obvious question. How do you go about achieving that?

The first trick is to make the winter work for you. Sure, it's cold and wet and you don't really want to be on the water much in July, yet you want to race well in February/March next year.

Here's my advice - remember the 3 Rs. Those of you who were at school in the 1970s or earlier will recall them as reading, (w)riting and (a)rithmetic - the old name for what is now called mathematics. For athletes though, there is a different meaning. In training terms, the 3 Rs are Rest, Recovery and Regeneration.

Rest is what you do in the 2-3 weeks after Nationals or Maadi Cup regatta. Your body and mind have been focused on peaking and now need a break. Don't feel guilty - we all need a chance to recharge the batteries and you will feel better for it come next season. But at the same time don't blob out too much - it is important to control your eating during these 2-3 weeks. It's okay to gain 2 or 3 kg, but any more than that will just make it harder to get in shape for the next season.

Recovery comes next. Deal with any niggling injuries. Go and see your doctor or physiotherapist and get a check up. Now is the time to alter any faulty movement patterns and build up the trunk and pelvic muscles. Good core stability helps win races. Indulge in some cross-training - cycling, running or aerobics.

If you're a thrill-seeker, do some skiing or snowboarding. Try to remain in control though, because one bad wipeout can leave you battered and a small or severe injury could put paid to part or the whole of next season. All of the above activities can keep you fit and provide a valuable mental break from rowing. Depending on your focus, you may wish to do some erg training or on water sessions, but keep those at an (enjoyable) aerobic pace.

Regeneration is the final bit. In preparing for the next season, you should aim to build on the aerobic fitness acquired over the winter. By spring, you should be hungry to get back in the boat and move it faster. Concentrate on correct technique, and then build speed and endurance.

So those are the 3 Rs. If you were to limit those three Rs to just one, the word would be 'Reconditioning'. As many of you know, this is a technique used by the All Blacks in their preparation for the 2007 Rugby World Cup. And if it's good enough for them, it's probably good enough for you.



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Treatment of rib stress fractures

Rowers are tough competitors. However, even the toughest cannot continue to train or compete long term with an active stress fracture. These injuries need accurate diagnosis and active treatment.

The aim is to return the athlete to the boat in the shortest, safest practicable time.

If you get localised pain in your chest wall, this could be a rib stress fracture. Then again, it might not be. Take the guesswork out of it - seek medical advice. In the first instance, go to your

local GP or physiotherapist. If they are unsure they can refer you on to a specialist.

Early on (in the first 3-4 weeks) a chest x-ray may be entirely normal, therefore a bone scan is often required to make the diagnosis. Bone scanning machines are located in New Zealand's six largest cities, so if you live in a smaller centre you may need to travel to get this test.

If the bone scan confirms a rib stress fracture, you need appropriate treatment.

The first thing is to rest the injured part. This requires time out of the boat.

How long? It depends on many factors. Usually, after about two weeks out of the boat the bones will be starting to heal and you will have less pain with rolling over in bed or lifting things around home. Then is the

time to go for a gentle paddle in a single scull for 3-4 km to see how it feels. If you can manage a couple of easy to moderate sessions with increased load towards the end (say 8-12 km), then it is time to rejoin your crew.

Every stress fracture should be regarded as a learning exercise for both athlete and coach. You want to look at possible contributory factors and try to minimise these. Pay attention to technique through various phases of the stroke. Some female rowers, particularly lightweights, are at risk of low bone density as their normal menstrual cycle may be disturbed. Discuss this with your doctor or specialist, as there are plenty of useful treatments to maintain good bone density.

In summary, a rib stress fracture need not be a disaster. A short time out of the boat, followed by progressive gradual recovery sessions and attention to any causative factors, is a recipe for future success.



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Beijing and the Olympic Rowing Venue - a medical perspective

I was fortunate to be able to accompany the New Zealand team to the World Rowing Junior Championships held in Beijing from 8-11 August 2007. The course is located at Shunyi, approximately 40 km northeast of central Beijing and 20 km northeast of the airport. It is the same course that will be used for the 2008 Olympic Games rowing and flatwater canoeing events.

So, what can New Zealand rowers and their supporters expect? I would describe the Olympic venues and accommodation as small enclaves of 'first world' facilities and services located within a rapidly developing country of great diversity. Our team was housed at the Eastern Garden Hotel and Conference Centre, only 1 km from the start of the rowing course and 3 km from the main entrance to the venue. The food was plentiful and of high quality and we had no cases of food related illness on tour. Bottled water and soft drinks, plus a limited range of snacks, were available for purchase at the venue.

The environment has been the subject of much media coverage. In our first few days the temperature averaged 26°C with 60% humidity and we did not see the sun. There was one thunderstorm on the afternoon of the opening ceremony, but this had passed by the time proceedings got underway. The Chinese have a long tradition of expertise with explosive devices (think where all our fireworks are made) and on the day they fired rockets into the air to disperse the pollution. Within a few hours there was clear blue sky and the temperature rose to 30°C.

It was hot and steamy on finals day, with the air temperature being 36°C and the on-water temperature a few degrees higher. Our athletes appreciated the cooling vests that had been supplied courtesy of the hard work of Brett Smith and Andrew Matheson, who managed to get a large freezer installed in our boathouse.

There were also bikes to warm up and down on, so no athletes had to pound the



hot pavement along the side of the course. No other team had these facilities on site. Overall, the regatta helped answer our questions for New Zealand athletes and supporters heading up to Beijing for next year's Olympics. There will be environmental challenges but we are well equipped to deal with them, and the facilities and infrastructure are first class. Roll on the competition.



Stretching for Rowers

There's a lot of debate about stretching - should you stretch, which stretches are best, and so on. In this issue, I thought I'd give you some basic information about stretches, plus my opinion on the two muscle groups that I think rowers should concentrate on for their stretches.

Types of stretches

These are divided into:

- Passive stretches, where there is no movement of the involved muscle group during the stretch; and
- Active or dynamic stretches, where there is movement during the stretch.

How they are performed

Passive stretches are performed with the muscle taken out to its maximal resting length, and then just beyond that, e.g. leaning against a wall to stretch your calf muscles.

Active stretches are performed with some movement. Therefore, to stretch the calf muscles, you can go to the back steps of your house, hold onto something vertical for support, and stand facing up the steps with the balls of your feet on the edge of the topmost step. Then, let your calf muscles relax and you will feel the stretch in the calf and achilles tendon.

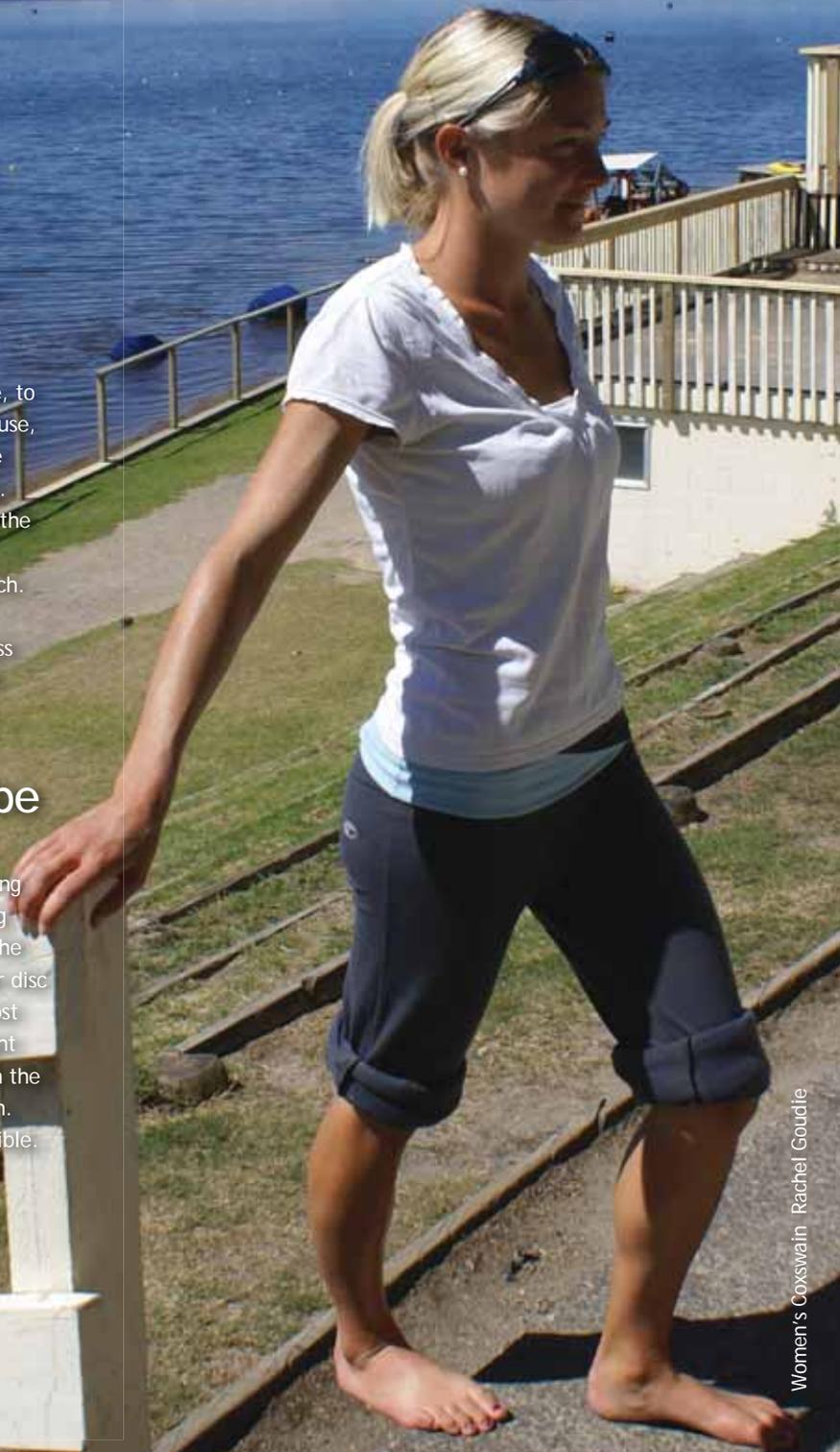
There is another type of stretch, called a hold-relax or PNF stretch. PNF stands for proprioceptive neuromuscular facilitation - try saying that fast, and when you can manage it, that should impress your physiotherapist. The hold-relax technique should be taught to you by an experienced professional such as a sports doctor or physiotherapist.

Which muscle groups should be stretched?

In my opinion, the muscle groups that most benefit from stretching in rowers are the hamstrings and calves, in that order. Hamstring flexibility is especially important. If you have tight hamstrings, the next available segment for movement is at the lowermost lumbar disc (in your low back). This is precisely the disc which shows the most advanced wear and tear changes in most people. If you have tight hamstrings, you cannot retain the curve in your low back through the stroke, and you will get a less efficient stroke, plus low back pain. For young rowers a straight leg raise of about 80° should be possible. If not, you have some serious stretching to do! For tight calves I recommend the calf stretch described above.



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Women's Coxswain Rachel Goudie

Alcohol and the Athlete

In this situation the heart does not beat strongly like a proper muscle but rather acts like a piece of jelly. This, obviously, severely restricts the amount of blood that can be pumped around the body and you cannot perform well as an athlete.

2. The brain - initially it works as a central nervous system depressant, as stated above. In excess dosage it can also cause memory loss. It may cause seizures and attacks particular parts of the brain to do with coordination. This has particular relevance to rowers, who need to maintain good balance in the boat.

3. The liver - excess alcohol consumption can cause fatty liver in the first few days after a drinking binge. It can then cause acute alcoholic hepatitis. If the person continues to drink excess alcohol over many months or years, this can lead to chronic hepatitis. Ultimately, this leads to scarring of the liver or cirrhosis. Liver cells get progressively replaced by fibrotic tissue and do not perform the usual function. Ultimately, this can lead to liver failure. Rarely, heavy drinkers may develop hepatoma, a form of liver cancer.

In addition to the effects on individual organ systems, alcohol is a high calorie/kilojoule substance. Therefore, excess consumption will lead to accumulation of excess body fat which can adversely affect performance.

In summary, it is okay to drink in moderation but not heaps. My suggestion for the safe use of alcohol would be as follows:

In the first hour a loading dose of one to two drinks - or three drinks if you are a large male athlete - should provide the social lubricant that you are looking for. Each hour after that you can have one drink and be assured that your liver should clear that drink from your body so that you maintain a steady state of mild merriment without going over the top and doing anything stupid.

So there you have it. Of course, if you ask a tee-totalling doctor you would get the response that tee-totalling is the only way to go. However, having looked after athletes from over 20 different sports over the last 20 years, I would say that, if used responsibly, there is no reason why an athlete cannot drink alcohol in a limited fashion and still perform at a high level.



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Skin problems in rowers

Dr Chris Milne

The skin is the largest organ in the body. It covers all of our other tissues and provides a barrier to prevent fluid loss from internal cells. There are a couple of body sites where the rower's skin gets too stressed and can break down.

The most important and obvious of these is the palms of the hands. The palms are in constant contact with another surface, the handle of the oar, and the rubbing creates shear forces between layers of skin. When these layers separate, fluid seeps in between them. The result is a blister.

How best to treat blisters? Traditional medical teaching is to not pop the blister or you risk getting an infection. However, the blister makes it impossible to continue training due to pain from the fluid, which is under pressure. I recommend cutting into the side of the blister with a pair of sharp, fine scissors

and draining it. Then you can cover the area with a flexible dressing (Mefix or Elastowrap) is best as it can mould over the curved surface of the hand. Ask your pharmacist if they sell short lengths of the dressing, as you should only need to cover the area for a week or so. Compeed dressings are a useful alternative and provide more cushioning over the blistered area of skin.

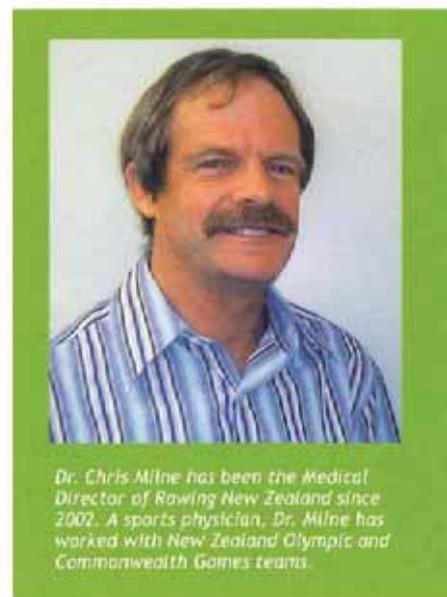
The second hand problem is the gradual buildup of skin over pressure areas, with months and years of training. Calluses get formed. This is a natural response by the body to the increased skin loading. However, sometimes these calluses can crack and become painful. The treatment is to get a sharp blade (e.g. a razor blade) and gradually shave off the thickened skin. If you prefer, get a professional such as a doctor or podiatrist to do this. If you're feeling brave, ask your flatmate! In some cases the procedure may need to be repeated in a few months.

The final skin problem is infection. Once again, the commonest area to be affected is the hands, where popped blisters or cracked calluses can allow bacteria to get under the skin surface and multiply. If you feel pain and redness moving up the arm, see your doctor the same day as this indicates a spreading infection. Antibiotics in high dosage for a few days, then continued for a course of about ten days, are very effective treatment. If you find you are getting lots of infections, you should mention this to your doctor. It may be a sign of overtraining, or you may be carrying the staphylococcus bacteria in your nostrils. Rarely it may be a sign of newly developed diabetes.

The other body site where rowers have trouble is the skin of the backside. You may have to experiment with different padding on your slide. In rare cases, the skin in this area can become infected and form an abscess. Do not mess around with home based treatments - get to your doctor and get the problem managed actively.



Manage it badly, and your rowing blisters can become a big - and painful - problem.



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Calcium and the rower

Calcium is a mineral that all rowers need for good health. It is a major constituent of bone and plays a significant part in muscle contraction.

Most of the body's calcium is locked up in our bones, but there is a small circulating pool. Bones might appear to be like stone, but you should think of them more like bamboo. They are constantly being remodelled in response to the stress put on them. This remodelling process can be thought of as rather like a seesaw. On one

side are the forces of bone construction led by the osteoblasts (bone building cells); on the other end of the seesaw are the forces of bone destruction, led by the osteoclasts that chew up old bone. Normally, these two types of cells operate in perfect harmony. If you are in heavy training there is an accelerated rate of bone turnover, with both types of cells being more active than in couch potatoes. However, if there are abnormal forces operating on a bone, even the increased osteoblast activity cannot make new bone quickly enough.

In the chest wall of the rower, this happens around the insertion of the serratus anterior muscle to the midportion of each rib. These ribs undergo excess bending, and if the heavy load continues for more than a few weeks the rower can end up

with a stress fracture of one or more ribs.

As you know, a rib stress fracture means several weeks out of the boat.

It is better to prevent these fractures happening in the first place.

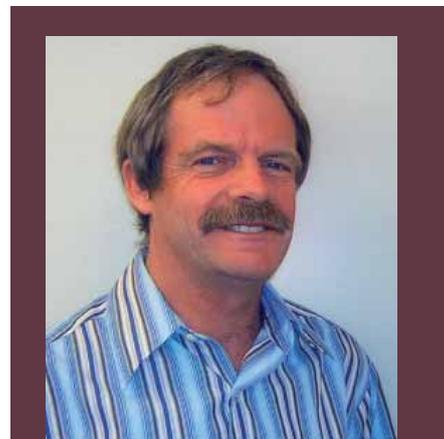
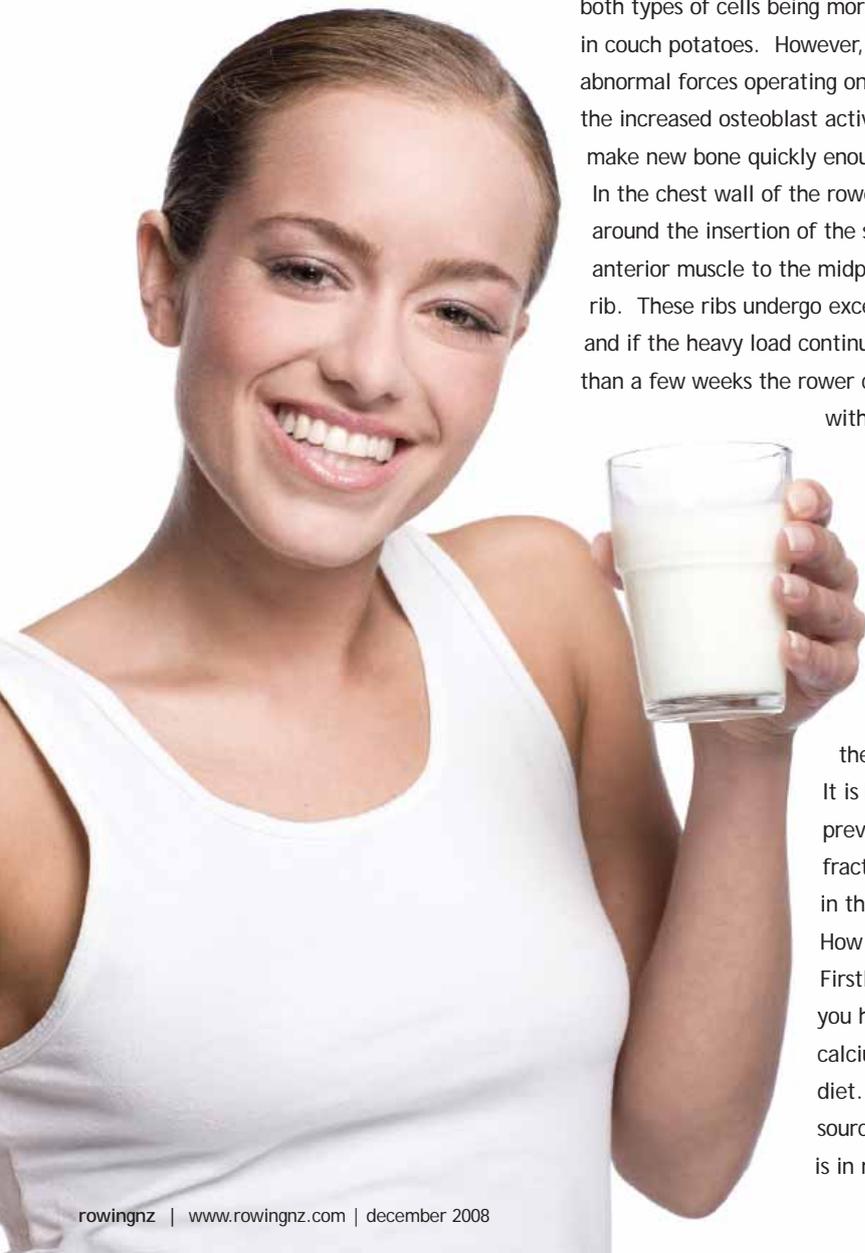
How best to do this? Firstly, make sure you have enough calcium in your diet. The best source of calcium is in milk and other

dairy products (cheese, yoghurt, butter). You should aim to drink at least 1-2 glasses of milk per day, or have the equivalent volume with your cereal or in milkshakes.

There is also a lot of calcium in the bones of fish such as tinned sardines. If you don't like milk, take calcium tablets.

Secondly, if you are a female rower whose menstrual periods get more spaced out or stop altogether when you are in heavy training, you may be running a bit short of estrogen. Estrogen is the main female sex hormone and one of its many functions is to lock calcium into our bones. Lightweight female rowers are more at risk of this problem - if you miss a period for three months, or have six or less periods in a year, you should see your doctor for expert advice.

Finally, if you do get local pain in your chest wall, go and see a doctor who understands rowers' medical problems as you may have a rib stress fracture.



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Exercise in the heat

With the recent extreme hot weather experienced in the Australian Open Tennis Championships, heat issues in exercising athletes are very much to the fore. This year's National Championships were held in late February, so it is timely to remind all our rowers of the strategies that would be recommended to maximise performance in hot conditions.

Firstly, athletes should train in hot conditions as a means of acclimatising to the stresses these pose on the body's thermoregulatory system. Ordinarily training in the late afternoon in summer conditions should be enough to accomplish

this. Heat acclimatisation is a complex process which results in early onset of sweating during exercise, but the production of more dilute sweat so that electrolytes are conserved. Also the blood volume is boosted so that there is a greater amount of

fluid available to produce sweat, whilst still maintaining circulation to the body's vital organs including the muscles.

Going into a hot weather regatta, one needs to be aware that the aim is to produce consistently good performances over the entire week, culminating in a top effort on finals day. Therefore, it is important to start each day well-hydrated and the best

Hydration is crucial when competing in hot weather

means of assessing the adequacy of hydration is to weigh yourself. If you do this consistently for a week you should have some idea of your wet weight, i.e. well-hydrated body weight. You can then do a few

measurements pre- and post-training, especially with the long rows, to get some idea of how much fluid you actually lose during a training bout and, therefore, how much needs to be replaced.

Traditional teaching is to replace 1 litre of



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fluid for every kilogram of body weight lost during an exercise bout. Some of this body weight will be in the form of carbohydrates which have been burned, so it need not be the full kilogram.

You should at least drink on any occasion when you feel thirsty. Over-hydration has been reported in athletes competing in very long events of over four hours' duration, e.g. ironman events, but has never been reported in rowers competing in 2km races.

Therefore, my suggested strategy would be as follows:

1. Start the day well-hydrated.
2. Stay out of the sun except when you are out on the water getting down to the start, or actually racing.
3. Replace lost body fluids as soon as practicable after you have raced.
4. It is a good idea to add extra salt to your meals during training and competition in hot weather. This can help prevent muscle cramps.

This advice is by no means comprehensive but gives you a good basis on which to prepare for training and competing in hot conditions.



Doc's view of diet

As rowers our performance on the water is dependent on many things. The most important of these are genetics and training, i.e. choosing your parents well and being coached effectively with good technique and an appropriate workload. However, on occasions, what food we put into our body can be a limiting factor in our performance.

What should the rower's diet contain?

Firstly, it should contain sufficient energy to get through the activities of daily living plus the significant additional requirements of training. Rowing is a very strenuous activity, as I need not remind you, and rowers can expend up to 5000 kilojoules per hour in heavy training. This is in the same league as cross-country skiers or elite distance runners. The calorie demands of rowing are even higher when one considers that the average rower weighs considerably more than the average distance runner. The diet should provide sufficient energy and also an adequate supply of micronutrients. There should also be enough variety so you do not get bored with what you are eating.

Brett Smith alerted me to an interesting

phenomenon several years ago. As New Zealanders we tend to have the attitude that food is fuel. We have a good deal to learn from some of the European countries where food is thought of as much more than fuel and, in fact, is rather fuel plus fellowship. The Italians and Greeks would probably epitomise this trend the best.

To consume enough calories through the waking hours off the water it is necessary to not only have high carbohydrate food but also some energy dense food, e.g. fatty food. Although this is anathema to some dieticians, the simple facts are that rowing

You should carbo load, not garbo load.

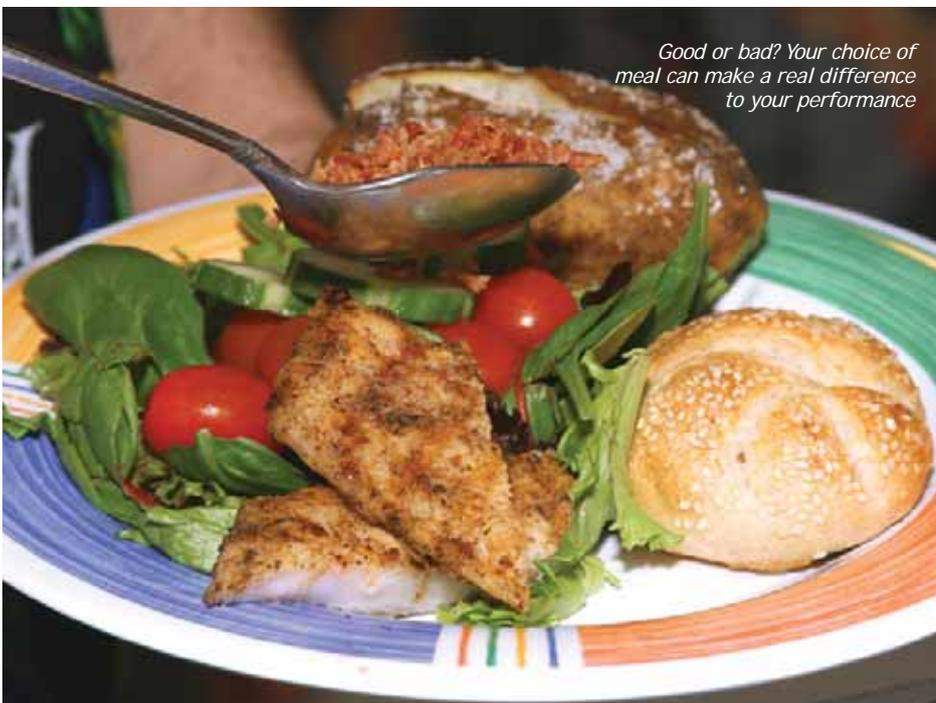
is a very energy intensive sport. I would suggest that some

of our male rowers in particular need to eat a bit more like rugby players, otherwise there is a tendency to drop below one's optimal training weight and then the body will metabolise protein - this is not an ideal

scenario. The demands of lightweight rowers are very specific and beyond the scope of this article.

What to drink? This should be sufficient to wash the food down and be both refreshing and, in some cases, stimulating. Caffeine can be useful if one is feeling fatigued as it tends to provide stimulation to the brain. Athletes in heavy aerobic training are particularly sensitive to the effects of any stimulants, so you need to avoid coffee or energy drinks after mid-afternoon if you are kept awake at night by these substances. In the lead up to regattas it is important to ensure that the body has a good supply of fuel to get you through the many events. This requires some tapering of the training in the two or three days prior to the regatta plus an increase in energy intake. You should carbo load, not garbo load. What you eat is entirely a matter of personal preference; some people prefer pasta, others rice, others potatoes or kumara or taro. Bread is a good source of carbohydrate as well. You should get yourself to the start line with the fuel tank well replete and up to your "wet" weight, i.e. not dehydrated, then you have the best chance of success. If on the other hand you are one or two kilograms below your ideal weight, this is likely to lead to poor performance. Work on good dietary habits over the winter and come the next competitive season you will be better than ever.

Good or bad? Your choice of meal can make a real difference to your performance



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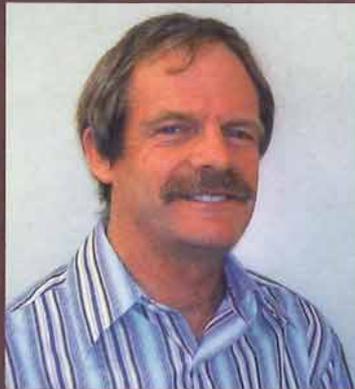
Early season preparation

Blowing off the cobwebs after a winter off the water is never easy. At present you should be basking in the reflected glow of the success of our New Zealand representative crews in Europe and aiming to try and become the best athlete you can be during the upcoming summer season. Before you get back on the water, however, it is best to do some conditioning work to maximise the value of your on-water training. I would recommend some cycling and light erg work, plus some running unless, of course, you are one of the Masters rowers and have already developed hip and/or knee arthritis. In that case it is best to stay away from the running and stick to non-weight bearing exercise. Start with 10-15 minutes cycling and build up the time and intensity as your fitness improves. You can go out on the road or use an exercycle. Also, now is the time to get back on the erg and slowly increase the duration of training. Go easy on yourself and set the resistance at a low level for the first few sessions.

Those of you who work in tall buildings can do some stair climbing to or from the office. Even if you don't work in a tall building, you can park a block or two from work and walk to and from your office or cycle to and from work from home. If you are extra keen you may wish to do some weight training as this can also help your early season conditioning. Stretches are another early season aid to injury prevention. In my experience, the leg muscles are more likely to get tired than those in the upper body. You could start by stretching the calf and achilles tendon complex by standing on the back step and gradually letting your heels drop over the edge. Hold this for a few seconds then perform a calf raise and gradually let your calves stretch out again. Over time you can move from double leg to single leg activity and this should help in keeping your achilles tendon and calf muscles at the appropriate length to enable you to do some running.

Quadriceps exercises can be done standing and holding onto a nearby solid object for support. Try and pull your heel up to as near your butt as it will go; if you are prone to falling over then do this exercise lying on your stomach. Whilst lying there you could roll over onto your back and do some hamstring stretching. Link both your hands behind the midsection of your thigh with the hip slightly flexed, then try to progressively extend the knee. As your flexibility improves you should be able to link hands progressively further down the thigh. If you have a willing partner at home, get them to help you with some PNF (hold-relax) stretches. Get your physiotherapist or fitness instructor to explain these exercises. Also, don't forget that the weather is getting warmer and you should get used to rehydration to replace fluids lost during training. It is easy to forget to do this - you should drink according to thirst and weigh yourself each morning to check that you are not becoming dehydrated.

All in all, this should set you up well for a good season of competition and to be able to make the most of your later on-water training.



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The Tired Rower

Most rowers in heavy training will complain of fatigue at some stage or other. If you have never been tired during a training build up then you probably haven't been training hard enough. The important thing is to distinguish ordinary training-related fatigue from medical illnesses and other problems that require specific intervention. This article is designed to give you a few pointers, but it is by no means comprehensive.

Firstly, be aware that all training programmes work on the principle of progressive overload. In other words, enzyme systems specific to the particular activity you are undertaking are progressively stressed; this enables the body to process oxygen more effectively and for you as an athlete to develop a greater power output. It is then your job to transfer that power to the oars and thence to the water. Another principle of training is that of specificity. In other words, the specific muscle groups to be used in racing need to be developed in training, hence the focus on on-water training and erg work, which is a close approximation to on-water training.

If you try and increase the rate of training too rapidly, or throw in too many anaerobic sessions, then the body does not get time to adapt. Instead of improving, your performance will go down and it may take many weeks to recover. Development of sporting talent takes many years and over the first five years or so of your participation you should notice a progressive improvement in your training times and ergometer performances. After that, things may begin to plateau out but you should always be searching for ways to improve that little bit further. However, if your performances drop off compared with the previous year's training then you should always question why this is occurring. It may be a training error but it may indeed be some form of medical illness.

When you go to the doctor you can expect them to ask about things like recent colds and flu-like illnesses. Also, keep an eye on your

weight as a significant drop in weight may indicate some illness. Your resting pulse is also a good guide to your general health and I would advise you take it once per week in the morning before you get out of bed to get an idea of what is normal for you

when you are fit. If the resting pulse is 10 to 20 beats higher than what is normal for you then this may be another indicator of either illness or over-training. Finally, pay attention to your enthusiasm for training. If you are feeling washed out and lack enthusiasm for training then this may be an indicator that you are doing too much or require more recovery time between hard sessions.

Another aspect to consider is other things that may be going on in your life. None of us are machines and issues in our home or personal life or study or career can all impact on how we are feeling and, ultimately, on sporting performance.

If you seek medical advice you should expect an examination which will include a check of your lungs, throat and ears, and may include an abdominal examination to check for enlargement of the liver or spleen, particularly if you have been in contact with anybody with glandular fever. The doctor would also check for enlarged glands (lymph nodes).

Blood tests are a controversial area and a lot of doctors and coaches have an unrealistic idea of what could be picked up in a blood test. The most important information comes from a detailed discussion with the tired athlete, and this may take 20 to 30 minutes on occasion.



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Cramps and what to do about them

Cramps are a problem for many athletes. The traditional teaching is that they are due to dehydration and electrolyte depletion, but a detailed study of the medical literature revealed only 28 cases that conformed to this theory.

More recently, the field has been studied by Professor Martin Schwellnus and his colleagues including Professor Tim Noakes at the University of Cape Town in South Africa. They did a prospective study of 209 ironman triathletes and found that cramps were most commonly associated with fatigue. They found that muscle cramping can be induced by sustained muscle contraction and in a laboratory cramps can be induced by nerve stimulation.

During fatiguing exercise there is increased baseline activity in muscle. Passive stretching works as a treatment within 20 to 30 seconds. They also found that athletes may have a decreased threshold for cramping in the recovery phase from injury. This is probably because of increased activity in the nerves supplying the affected muscles.

What should athletes do to prevent cramps? Firstly, one should aim to prevent premature fatigue. This is best done by a structured training programme, as all of our rowers undergo, plus an appropriate pre-race taper. Also, be aware of sticking to an appropriate race pace in competition; people who go out too hard are more likely to blow up and suffer cramps.

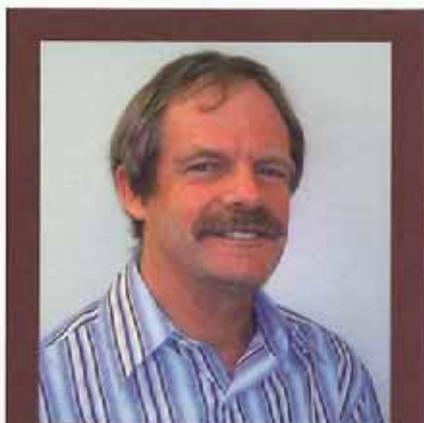
Obviously, nutrition is important and it is important to keep well hydrated and replace electrolytes, particularly on hot days where you are competing in multiple events. Some athletes will find they benefit from having sports drinks rather than pure water or cordial between races. Others prefer to use bananas or other fruit. There is a wide range of energy and recovery bars on the market and these can help some people, but they are generally quite expensive and a lot of their claimed benefits are nothing more than aggressive

marketing. Finally, one should slow down on hot days as fatigue occurs earlier in hot conditions.

There are a few athletes who deserve further investigation and these include those who have recurrent cramping or who have cramps in association with collapse, confusion or become comatose. Most people will only experience cramping in the muscles they are exercising vigorously,

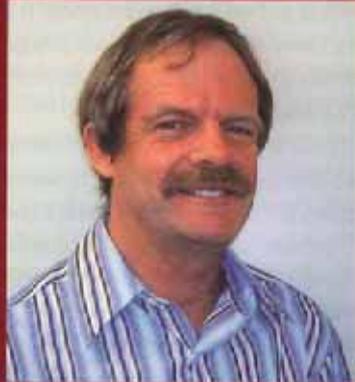
however, for rowers this means virtually every muscle. If, however, you are doing an activity such as running then it is really only the legs that are working hard. Athletes who develop generalised cramping when they are only exercising some of their muscles hard also deserve further investigation. Also there are a few families who suffer from inherited metabolic problems, so if you come from a family of crampers then this is worth mentioning to your doctor.

In summary, keep yourself well-hydrated and stay out of the sun on race days but be aware that most muscle cramps are a result of fatigue.



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Off season training for rowers



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We are now in the winter months and whilst the New Zealand representative crews are preparing for major overseas regattas, most club level rowers are off the water and only some will be interested in some off season training. What options are there for the rower who wishes to maintain fitness in the off season?

The first of these would be running. Not all of us are natural runners and it tends to suit those

with more of a lighter than heavier body build. The major difference from rowing is that the bodyweight is not supported whilst running and so there are greater loads through the legs. Therefore, those people performing running training are more prone to leg pains (shin splints) and achilles tendon problems. It helps to gradually build up any distance and intensity and use appropriate footwear.

For those people with a flat foot or high arched foot orthotics may be necessary. You should seek advice from a specialist shoe retailer to ensure that the running shoes you select are appropriate for your foot type. Running does have the advantage that it is very time efficient and 30 minutes of running will probably have the same benefit for your leg muscles as a full hour of on-water training.

Another alternative is cycling. In this case the bodyweight is supported so there is not the jarring up through the leg. There are potential hazards with regard to cycling in wet conditions and you should beware of slippery surfaces, particularly where there are painted road markings or a shower of rain has occurred after a dry period. Also, be well aware that most drivers have never been cyclists and often do not give cyclists the space they need on the road. If you are cycling you should stay in single file, except if you are off-road where there are no other vehicles.

The prolonged flexion with cycling can lead to some low back pain and you may prefer to cycle in a more upright position.

Swimming is another alternative which will exercise both your arms and legs, but does require driving to a pool. The main area of the body which can get overloaded with swimming is the shoulder, and you should consult your doctor or physiotherapist if you develop shoulder pain as a result of swimming. Appropriate rotator cuff exercises can help prevent this problem.

Another option is to carry on with some ergometer training, as this is the most rowing specific activity. Clearly, not everybody is fond of erg training but it is another time efficient method of maintaining winter fitness.

Finally, the gym offers a range of indoor activities that can be completed whatever the weather outside. These include treadmill, exercycle, cross-trainer or weight training and circuit training. If you are unfamiliar with the equipment you should seek specialist advice from the instructors at the gym.

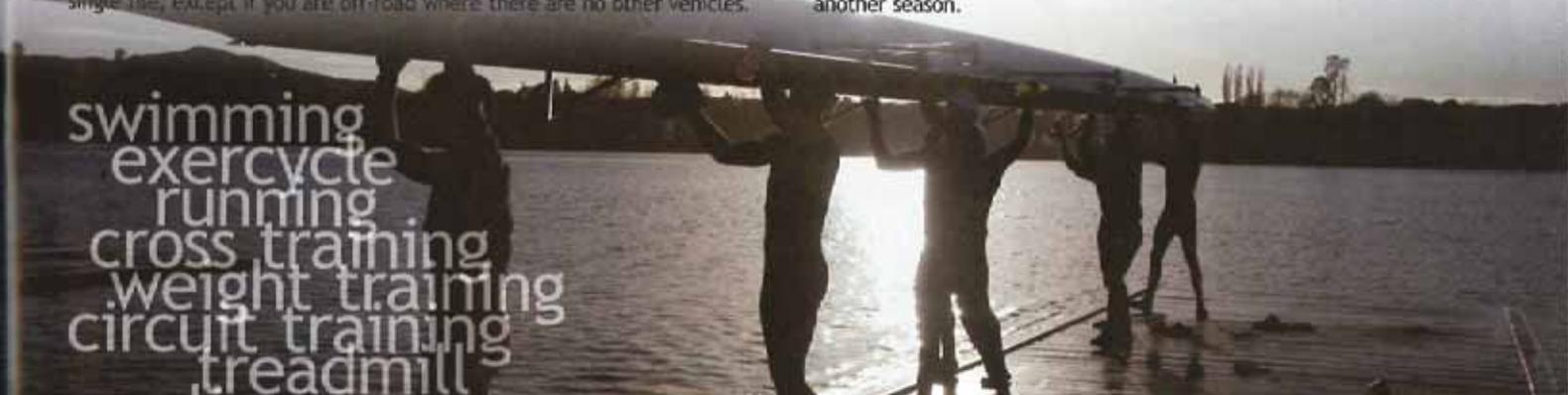
One thing we all have to look out for is winter illnesses. Coughs and colds are more prevalent during the winter and most will pass off in a week or so. If you have a blocked or runny nose then get hold of some nose spray and use this two or three times daily for up to five days until the nose clears. Most winter respiratory infections are viral so antibiotics will be of no use. However, if you have a cough with thick yellow or green phlegm then it is worth seeing your doctor for a check up. During any infection you should stop training if you have severe muscle ache or symptoms from below the neck, e.g. a productive cough, or otherwise you will just drag your condition down, as your body needs all its energy to fight the infection. Once your resting pulse rate has returned to normal it is safe to resume your usual training.

So what does winter training offer the rower?

- It is an opportunity to maintain some base aerobic fitness through the off season.
- It can prevent weight gain over the winter period.
- It will enable you to enjoy some of those energy-dense winter foods without an attack of the guilts.

Once spring emerges and the days lengthen, you should be in the best possible shape to resume your on-water training in preparation for another season.

swimming
exercycle
running
cross training
weight training
circuit training
treadmill



Preparing for the big day

With the impending World Championships to be held on our home water at Karapiro, I thought I would dedicate this article to those issues which revolve around preparing for peak events.

There is an acronym that is best summed up as the five Ps. One translation is Proper Preparation Provides for Peak Performance, however this acronym is subject to translation in many ways. The key word is preparation. A peak event such as the World Championships is the focus of an athlete's entire season; everything is geared towards producing the season's best performance on Finals Day and all energy should be channelled towards athletes performing up to their potential.

The cornerstone of a top performance is a properly structured training programme. This relies on progressive overload of energy systems and body tissues so as to support a high level performance in races. With each heavy training session you undertake, your muscle tissues get relatively starved of oxygen. This promotes the growth of new blood vessels to the area where oxygen is needed and also an increased enzyme concentration so that glycogen can be burnt to supply energy for that supreme physical effort.

As a guide to what you can manage in any particular season, you should look at the previous season and aim to improve by up to 10%. Do not try and double the workload that you have tolerated in the previous year as this is a recipe for overtraining and ultimate disappointment. Discuss these

issues with your coach, and if you are having symptoms of overtraining then the best plan is to back off a little until the batteries can be recharged and then you can push on again.

Medically the important thing is to remain well. You should avoid contact with those people who have acute respiratory infections as these are often highly contagious. Athletes in high level training have been found to be more susceptible than the average person to picking up infection. This is probably due to several factors:

Firstly, the high volumes of air taken in in training tend to bypass the protective mechanisms in the upper airways and, therefore, air containing moisture droplets with infectious diseases can travel to the deep part of the lung.

Secondly, if you are unlucky enough to get an illness do not try and train hard through it. The body has only a certain amount of adaptive capacity and it is better to back off and let all that energy be directed to improving your health so that you can then resume training.

Thirdly, you should ensure that your diet is optimal. This should supply sufficient energy for daily living and training requirements plus micronutrients, especially



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iron, which is necessary as a building block for haemoglobin to carry oxygen around your blood stream. Calcium intake is also important as this builds strong bones.

Do not overlook your equipment. Gear failure in a major event can be catastrophic and undo all of the hard work you have put into training. Therefore, check the condition of the riggers and other vital parts of the boat.

Finally, don't forget to freshen up. You have trained hard all season to give of your best during the week of the major regatta and you need to hit the start line fizzing and ready to go. Therefore, in the weeks leading up to the major regatta your coach will advise shorter training sessions with high intensity workouts designed to optimise function in the energy systems necessary for racing. The week before a major regatta is a time to taper. This involves cutting back the training volume pretty significantly which, in turn, allows body tissues to be in the optimal state for turning out that supreme performance.

If you pay attention to all of the above factors you will maximise your opportunity to perform at your best. You can be assured that you have controlled all of the variables that are within your control and just take whatever water and overhead conditions that are present on the day in your stride. Remember that all athletes will have to row the same course whatever the conditions.

Happy racing.



Blisters and what to do about them

Blisters are the bane of many rowers' lives. In a perfect world you will be able to row for 200km or more per week and not develop any blistering. However, this is clearly not the case, as any rower who is in regular training will attest to.

Why do they happen? Blisters are caused by shearing forces between the skin and the underlying tissue. Fluid accumulates in the space between these tissues and the local pressure effect causes pain. Therefore, the most reliable way of relieving the pain is to drain the fluid collection.

I usually recommend cutting the area with a sharp fine pair of scissors, having applied Dettol or some other disinfectant to the area to minimise the risk of secondary infection. This is frequently touted as a risk by doctors but, in my experience, in athletes it is very rare if the procedure is performed carefully with a clean pair of scissors. As an old distance runner, I personally cut into more than a thousand of my own blisters and only had one or two of them become infected. Once the fluid has been drained then the top and base of the blister can once again join up and the symptoms should rapidly resolve.

You should note that this advice is different to that given to burns victims who have blistering in association. With burns it seems to be much more common for blisters to be infected. Also there is no significant local pressure, as one gets in the hands of rowers. Therefore, the plastic surgeons routinely advise leaving the blisters of burns victims intact.

Once the blisters have been drained, you can apply a variety of local materials to the area to protect the underlying skin. My personal favourite is Stretchfix or its equivalent Mefix. These have the ability to conform to complex curves and enable the rower to get back to on-water training in the shortest possible time.

What are the signs of secondary infection? Usually once a blister has been popped you can expect the pain will get dramatically less in the next 24 hours. If it gets worse, and particularly you develop redness



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around the blisters with some tracking of that redness up the palm of your hand or up the forearm, then you should be very suspicious of secondary infection. Do not wait to become feverish or develop a lump in the armpit. Go and see your doctor and get onto some antibiotics. These are usually very effective and should bring the infection under control within a few days. However, it is important to take the full course of antibiotics, which may be for a week or 10 days, depending on your doctor's preference. Most people can tolerate penicillin, and flucloxacillin would be my personal preference to use in athletes with infected blisters. For those who are allergic to penicillin then Erythromycin would be the alternative.

Importantly, any athletes subject to drug testing should avoid use of probenicid. This drug is helpful in blocking kidney excretion of penicillin but can also block the excretion of other drugs, therefore it is a banned drug in high performance sport.

Occasionally I have been asked why rowers do not wear gloves routinely in training. I suspect this is because the feel of the oar is critical in maintaining an ideal stroke and giving feedback to the body.

In summary, you should expect to have more than a few blisters during your rowing career. The trick is to manage these appropriately by decompressing them before they become large and allowing them to heal up before returning to your full training load.



Low back pain in rowers - how to prevent it

Low back pain is the commonest injury in rowers. In any one season, 5% of our elite crew members can expect to have a low back problem. Over the course of a career in rowing, over 50% of athletes will experience a low back problem. This makes it the norm rather than the exception. Back problems frequently require a good deal of time out of the boat. Therefore, anything we can do to prevent this problem is well worthwhile.

Why do rowers get back problems?

There are two main reasons:

THE FIRST is to do with the anatomy (structure) of the back. The spine consists of a series of vertebral bodies (shaped like cotton reels) with discs (like rubber cushions) between them. These rubber cushions are prone to split around their edges and bulge with repeated loading, particularly if that is asymmetrical. In addition, there are supporting struts extending from the side and to the back of each vertebral body and these are linked to facet joints at each segmental level. These are prone to wear and tear, especially as we get through middle life. The whole process is accelerated if there is insufficient support from the surrounding muscles.

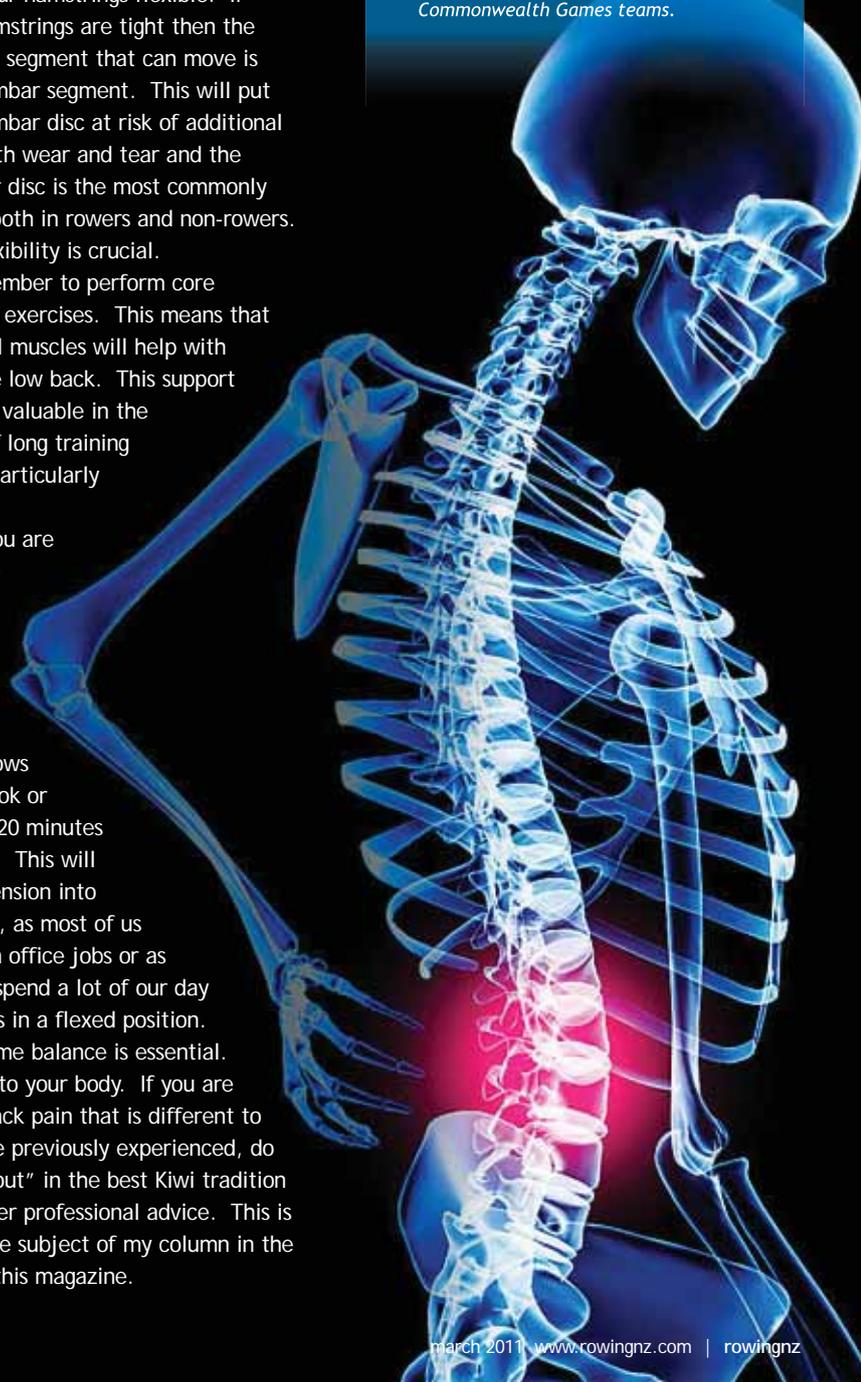
THE SECOND factor is the nature of rowing training. As we all know, it requires many kilometres of on-water training (over 200km per week for our elite crews). In addition, there is off-water training including ergometer work and weight training, plus cycling and running. All of this puts a lot of load through the back. This is a combination of axial load plus flexion and extension for scullers. In addition, for sweep oar rowing there is the rotational stress which the lumbar discs do not like. Therefore, you have to be very well conditioned to get through the training without back problems. The back is most vulnerable when you are fatigued or, conversely, when you are stiff and not properly warmed up.

What can you do to prevent back pain?

1. Get properly conditioned. This requires a structured programme of pre-season conditioning and then on- and off-water training that your coach will put together for you.
2. Keep your hamstrings flexible. If your hamstrings are tight then the next available segment that can move is the lowest lumbar segment. This will put the lowest lumbar disc at risk of additional movement with wear and tear and the lowest lumbar disc is the most commonly injured one, both in rowers and non-rowers. Hamstring flexibility is crucial.
3. Do remember to perform core stability exercises. This means that the abdominal muscles will help with support of the low back. This support is particularly valuable in the second half of long training sessions and particularly races.
4. When you are at home practice lying on your stomach and prop up your shoulders with your elbows and read a book or magazine for 20 minutes twice per day. This will get some extension into your low back, as most of us are working in office jobs or as students and spend a lot of our day with our backs in a flexed position. Therefore, some balance is essential. Finally, listen to your body. If you are getting low back pain that is different to what you have previously experienced, do not "grunt it out" in the best Kiwi tradition but seek proper professional advice. This is going to be the subject of my column in the next issue of this magazine.



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Low back pain in rowers – how to manage it

In the last issue I talked about prevention of low back problems. If you are unlucky enough to have an episode of low back pain, however, it tends to suggest that these measures have not been altogether successful. Therefore, you need a plan to work on to try and settle the back pain and get you back in the boat and training well.

The first step in managing any medical or injury problem is to get a diagnosis. Therefore, do not attempt to manage your back pain without consulting an experienced clinician. You have a choice of going to a doctor or a manual therapist. Manual therapists may be trained in physiotherapy, osteopathy or chiropractic and all of these professionals have a role to play in managing back problems. Each has their own particular perspective on the issue and I will give mine as a medical professional. Most rowers' back problems relate to excess loading, as I mentioned in the previous article. Over time this can cause some premature wear and tear in the discs and facet joints in the back. These can then become irritable. Disc problems tend to be worse in flexion, i.e. when you are bent over sitting, driving or at the catch phase of the stroke. By contrast, facet joint problems tend to be worse when you are standing or extending your back or at the finish of the rowing stroke. This is not a hard and fast rule but it is a general guide. If you develop referred pain down your leg then that is most likely to be due to some pressure from a disc on one of the lumbar nerve roots. This is called sciatica in the lay press. The technical term is lumbar radiculopathy. In other words, there is pressure on the nerve root and this pressure is very painful, hence the leg pain will usually be worse than the back pain if it is true sciatica. Very rarely there will be a non-spinal cause for back pain, e.g. pain from the kidneys or abdominal organs. In older people we have to be concerned regarding possible cancer or infection, but these problems are incredibly rare in young athletes. Management is structured along the following lines:

1 Unloading the spine. Usually this will mean time out of the boat for a few

days or more and concentrating on just getting through the routine daily activities.

2 Adopt the posture that causes the least pain. For most people this will mean avoiding prolonged sitting and getting up from a chair every 15-20 minutes and extending the back. If you do have to drive then it is important to get out of the car every half hour or so and just walk around the car. Often this will be sufficient to take the worst of the back or leg pain away.

3 Do not be too hard on yourself in terms of taking painkillers. The range of medicines available these days is pretty wide, but most times I recommend people take Nurofen, Voltaren or paracetamol in regular dosage for a few days at least to try and get on top of the pain. In some circumstances, if there is a lot of muscle spasm and night pain then low dose Amitriptyline can be worthwhile.

4 Once you have seen either a doctor or manual therapist you should be given some indication of where they think the pain is coming from. This is called a working diagnosis. Do not expect it to always be correct but it is a starting point and can be modified in the light of subsequent developments.

5 It is rarely necessary to do an x-ray early on with back problems but if they persist then an x-ray can be a good idea, e.g. after one month.

6 Be aware that most lumbar spinal problems settle well within a week or two with the above plan plus some manual therapy. This involves mobilisation, i.e. twisting the spine, plus advice regarding posture. From time to time you may be expected to wear some tape on your back to remind you to keep the lumbar region in extension, for example. This is a useful educational tool in some people.

7 If your leg pain greatly exceeds your back pain then you should be suspicious

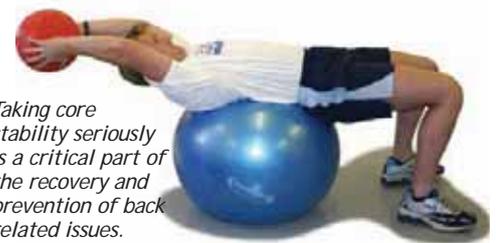


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of sciatica and this is less likely to settle with simple manual therapy. By all means go along and have a few sessions of mobilisation, but if things are not coming right within a week or 10 days do not persevere. This is an opportunity to go back to your doctor and consider further referral, e.g. to a specialist who is familiar with epidural steroid injections. These are by far the most effective means of curtailing the disability from sciatica. The high dose cortisone shrinks down the swollen disc fragment and takes the pressure off the nerve. Usually you should notice benefit within a week or 10 days.

8 Be aware that surgery is hardly ever required for most back problems. If there is significant sciatica that has not settled following an epidural injection then it may be worthwhile considering an MRI scan and referral to a spinal surgeon. However, most back problems can be managed without the surgical knife and certainly this is what most people prefer.

9 Finally, do not neglect your core exercises. These are essential to maintain good control of the muscles around the central part of the body. The stronger your core is, the most likely you are to realise your sporting potential.



Taking core stability seriously is a critical part of the recovery and prevention of back related issues.

Life as the team doctor

Having just returned from the World Rowing Championships regatta in Bled, where I have been the team doctor for the elite team, I thought I'd write about that role.

Having been Medical Director for Rowing New Zealand since 2002, I have had the opportunity to travel with our teams to several overseas regattas.

The first thing is to know your athletes.

In rowing, we are fortunate to have a centralised system for our Elite, Under 23 and Junior programmes. This means that all our best athletes come to Karapiro, so they see myself or Dr Brendan O'Neill for their medical screening and any medical or significant injury concerns that arise from training. Therefore, we have time to build up a rapport with the athletes and this is immensely valuable when there are significant events - think of Mahé's tribulations at Beijing in 2008.

Secondly, one needs to prepare well. This means arranging for drugs and supplies to be sent over in the container many months in advance. Countries are naturally a little wary about drugs crossing their borders, but thus far, we have had no major issues. The doctor has his/her own medical kit, with a stethoscope etc for diagnostic purposes. This travels with me, as part of my luggage. The team are given advice regarding specific medical issues, such as training and competing in intense heat for example. There is also plenty of valuable input from other people such as physiology experts, but in essence, the buck stops with me. This is because I have overall responsibility for the health of the athletes, and they have to be healthy before they can perform to their potential.

Thirdly, one must go beyond the physical.

I am a 'body mechanic' but aim to go much further than that. One must become a confidante of the athlete, if they are to

have the trust in you that is so essential. It is professionally very satisfying when any of our crews perform well, but for me there is something extra special when one or more members of that crew have had to overcome a significant health issue to make an A final, for example.

Fourthly, there are things that arise on tour that need to be dealt with on tour. We had one athlete that needed an MRI scan for his back, so we drove through to a nearby city in Austria to have this done in a timely fashion. This provided good information on which to base later advice. There was a 'gut bug' in one of the other team hotels in Bled. Fortunately, it did not spread to our hotel. My role was to keep up with the information that was being provided by the regatta organisers, and interpret this for our team. Otherwise, there was the risk of over-reaction and general anxiety in the team. If the doctor is not seen to be holding a steady nerve in the face of adversity, what chance is there for others! Finally, there is the 'gofer' role. For me, this mainly revolves around accompanying the athletes selected for drug testing and making sure that WADA procedures are complied with. All was well in Slovenia. However, there are other more menial but no less important tasks such as taking water down to the athletes after races, plus getting boats and equipment from the 'off' pontoon.

It is usual to have some clinical interaction with one's colleagues, both within the NZ team and with other team doctors. In Bled, this interaction was a little closer than I had planned, as I slipped over and gashed my knee. This required me to be stitched up by

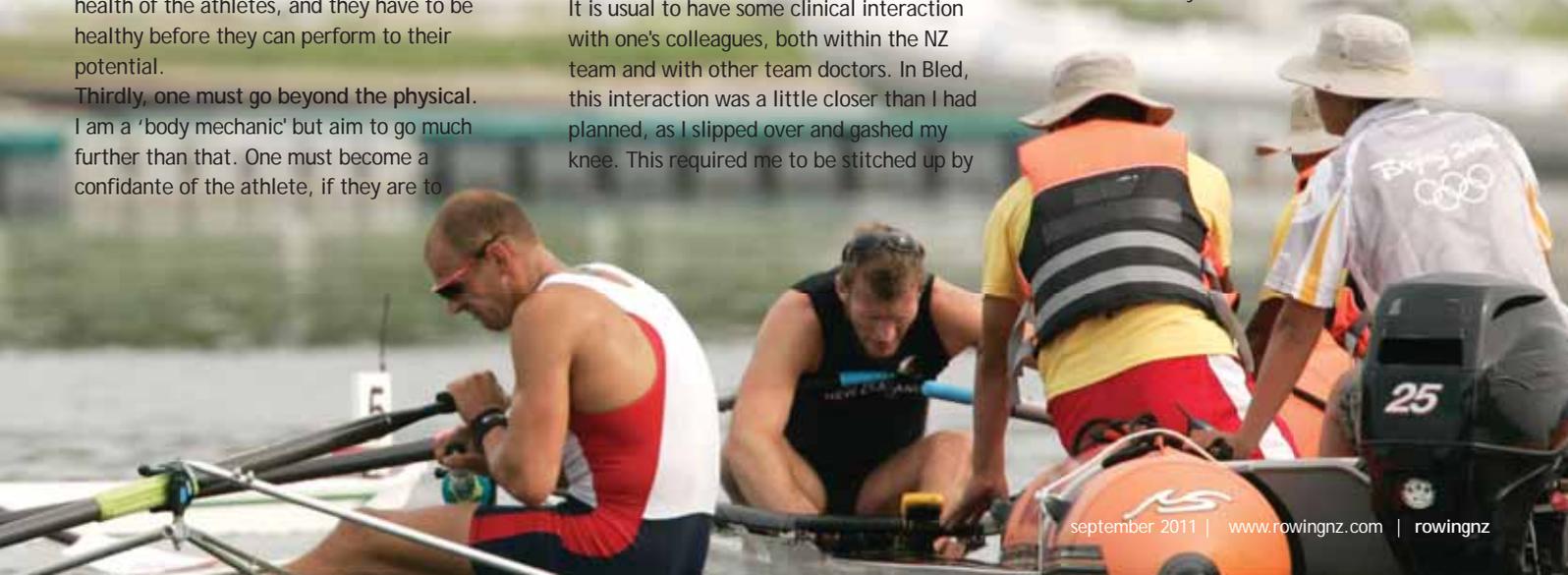


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my mate Greg Lovell, who is the Australian team doctor. This occurred the same day as the All Blacks were being 'stitched up' by their non-colleagues the Wallabies!

Once during every World Championship regatta, there is a team doctors' meeting. This provides an opportunity for issues of medical concern to be raised. Since our athletes were leading on the water, I felt it was appropriate for me to provide some clinical leadership on land. I therefore prepared a talk on atrial fibrillation in athletes, since this has affected several of our elite rowers. Also, I presented data from the survey conducted at the 2010 World Championships held in Karapiro. There were other presentations from other team doctors, and a discussion regarding the 'no needles' policy brought in by FISA.

So, as you can see, there is plenty going on when we are away. However, I'm pleased to report that there was also an opportunity to sample a few good Euro beers in a warm environment, and that is usually a good way to end the day. Roll on London 2012.



Runner's knee in rowers

This is the time of the year when the coaches ask our rowers to do a fair bit of cross-training. Often this will involve running. Whilst there are many rowers who are natural runners, there are a fair few who suffer injury whilst doing this pre-season conditioning. The most common cause of problems is pain arising from the patellofemoral joint. This is the joint just behind the kneecap and it is the most common single problem we see in sports medicine.

The cause of the problem is usually faulty alignment of the leg and foot combined with running training, and the volume of training, particularly if it is increased rapidly, may contribute to this.

Most rowers who suffer from this problem will tell you they get pain behind the kneecap that is worse with stairs or hills and also sitting in the car or at the movies for long periods of time. Often there will be associated clicking, but this is more a nuisance than a serious symptom. Occasionally there may be swelling as the knee joint produces extra fluid. From time to time an athlete may have a catching sensation, but it is only rarely that the knee locks up. Occasionally they may also have instability, i.e. the knee feels like it is going to give way on them. This is a sign of irritation in the joint and the muscle is letting go to try and relieve that pain.

If you go to a doctor or physiotherapist the examination will usually find no excess fluid in the knee joint and the major ligaments will be intact on clinical testing. Likewise, provocative tests for the menisci (cartilages) will also be negative. Occasionally, particularly in female athletes, there may be some irritation when the kneecap is pushed out to the side of the joint. Also there may be some clicking or grating when a hand is placed over the kneecap as it is bent through a range of motion.

Because of the frequent absence of any clinical signs, many doctors tend to struggle to work out what is going on in the knee. Only rarely will an x-ray be required and this is usually only needed if there has been a history of a direct fall on the kneecap or a history suggestive of the kneecap slipping out to the side, i.e. patellar instability. In

this case, a skyline x-ray is the most useful view in addition to the routine views.

Treatment is as detailed below:

1 You should perform isometric quadriceps exercises. This involves sitting in a chair and pushing the knees hard back, holding for a count of five. Do this 10 times before every meal and as often at other times during the day as you can remember. For additional strength you can turn the feet in towards one another.

2 A wedge in the arch of your shoe can help reduce pronation, i.e. reduce the tendency for the arch of the foot to collapse. This, in turn, causes internal rotation of the lower leg which can contribute to ongoing knee pain.

3 You should go and see a physiotherapist and have some patellofemoral taping plus more specialised exercises for the gluteus medius muscles around the hip. Core stability exercises can also be of assistance. The important thing to stress is that most people get significant relief with the above treatment and can be back performing full training, including running, within a couple of weeks. For those people who continue to get running-related knee pain it may be necessary for them to do cycling or other cross-training when their crewmates are running. Be aware that if you are a cyclist you should not try and pull too big a gear, otherwise this will cause excess pressure through the patellofemoral joint. All in all, this runner's knee problem is eminently curable providing one sticks to the basic treatment outlined above. It is not a condition that requires surgical treatment and it should not keep you out of the boat for any prolonged period.



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Local cortisone injections - the good oil, not snake oil

The idea for this article came from one of our senior coaches, John Robinson. There are plenty of misconceptions out there and this article aims to give a mainstream medical view of the issues.

Firstly, what are they? Corticosteroid injections are powerful anti-inflammatory drugs used to treat asthma, arthritis and other conditions. They should be distinguished from androgenic anabolic steroids, i.e. male sex hormone type drugs; these are banned drugs and have no place in injury treatment. The other main group of steroids is female sex hormones, e.g. oestrogens and progestogens, and these are used in the pill for contraception and also hormone replacement therapy.

What do they do? By their anti-inflammatory action, they reduce pain and swelling and encourage removal of debris from the injury site. This in turn promotes a greater range of motion and proper alignment of scar tissue as injury repair takes place.

Any critique of medicines should include a review of their benefits versus risks. Cortisone injections have the benefits of relieving pain and swelling and therefore improving healing. By this means they allow a return to all training and, ultimately, competition.

What are the risks? The commonest risk, which occurs in up to 10% of cases, is dimpling and loss of skin pigment around the injection site. This is most commonly an issue with injections carried out at sites close to the skin, e.g. those for tennis elbow. By contrast, injections at deeper sites are not typically associated with this complication. Another important complication to be aware of is that of a post injection flare. This will occur in up to 5% of cases and usually takes the form of worsening of pain at the site the injection was performed. The best treatment is to take anti-inflammatory tablets, e.g. Nurofen, 2 tablets every three to four hours until the flare subsides. Usually this will be in a day or two. A further complication is



that of skin flushing, particularly around the face, and this may occur for a few days after an injection.

Rare complications include tendon rupture and therefore we give people the advice to avoid loading up the tendon, particularly in the first week after an injection has been performed as the injection tends to cause temporary softening of the tendon tissue. A very rare and feared complication is that of infection around the injection site. This is incredibly rare, i.e. probably 1:1000, and needs same day medical review and high dose antibiotic.

Some side effects are confined to certain patient groups. For example, people with diabetes may notice a rise in their blood sugar level for a few days after the injection, and those on insulin will require an increased dose for that time period. Some women who have received cortisone injections report their next menstrual period may be heavier and last longer. This complication is rare in women who have not had children.

Do they need to be performed under ultrasound guidance? The answer to this is only in selected circumstances. Firstly, if the site is difficult to access, e.g. deeper structures around the hip or a narrowed AC joint in an older athlete may be difficult to access. This also applies to small tendons around the wrist. In these cases an injection is best carried out under ultrasound guidance. However, in the vast majority of



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cases an injection can be safely performed in a doctor's rooms. The critical thing is the experience of that particular doctor in performing injections at the site involved. After an injection it is important to leave things for a few days before loading up the tissue. In essence, this means you can perform your normal activities of daily living but not overuse the injured part. For example, after a shoulder injection it is reasonable for a rower to continue with cycling training and maybe running and lower body weights in the first week or so. After that the athlete can resume some progressive erg training at low resistance before getting back to row in a single scull. Once that has been accomplished and the athlete feels confident then they can resume training with their crew.

As with any medical treatment, it is important to realise that the injection is just part of a total treatment package. The best results come from a combination of an injection with a progressive rehabilitation programme and your physiotherapist is best placed to supervise this.

For athletes subject to drug testing no particular forms need to be filled out these days. However, if they are selected for a drug test then it is important to declare that they have recently received a cortisone injection (i.e. within one month). If need be, the testing authorities will contact the athlete's doctor if they wish to seek verification of this. An athlete having a cortisone injection for a proper medical reason, e.g. recognised injury treatment, need have no fear of contravening the doping regulations.

Winter ills and chills

As I write this we are in autumn (season of mists and mellow fruitfulness, according to an English poet whose name I can't quite recall from high school English). By the time you read this it will be winter and the winter ills will be upon us. How best to deal with them if you are an active athlete?

The major winter illnesses are colds and flu - flu is short for influenza. Most people who think they have "the flu" just have a cold. A cold is characterised by a cough, runny nose, blocked nose and fever but generally the person can get about and function. Influenza, on the other hand, is characterised by severe muscle ache and fatigue and usually the person will be bedbound. There is of course boy's flu, which is quite a different phenomenon and is based on the fact that we men do not have to bear children and so have to sometimes over-dramatise a cold to get attention.

Most winter respiratory tract infections are caused by viruses. Occasionally there can be complications with secondary bacterial infection. This may be up in the air cavities behind the nose and cheeks and then is called sinusitis. If, however, it affects the lower airways it is called bronchitis or pneumonia, depending on the severity. These bacterial infections need antibiotics, but a simple cold or influenza is not helped by antibiotics.

Another complication that can ensue is the development of asthma. Usually this will occur in a known asthmatic but occasionally people will develop asthma for the first time after a winter infection. If you have a severe cough and wheeze during and

after exercise, and particularly a night cough, then it is important to check out the possibility of asthma. Usually it will result in vastly decreased performance. This is because the airways become swollen and narrowed and often get plugged with mucus. Therefore the work of breathing is much greater and there is less energy available for the exercising muscles. Active management of asthma will usually bring about resolution of these symptoms and signs within a week or two. Of concern to the athlete is when can I train? In simple terms, the answer is when you are on the mend. There is a very useful test called the "neck check" popularised by Randy Eichner, one of the senior physicians in the USA. In essence, if you have no symptoms below the neck, i.e. no productive cough or muscle ache affecting your arms, back or legs, then it is safe to train. If however you do have symptoms below the neck, you should wait until these resolve before attempting to train. Also your breathing should be normal and, in particular, there should be no evidence of asthma. Most adult rowers can blow a peak flow of over 500L/min and some of our elites can get up to 700L/min, therefore anything below 500L/min needs to be regarded with suspicion. Finally, one should have one's usual energy back before



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attempting to go out and train hard. In general, athletes have a lower risk of infection than the average cough potato, but intense training can tip the balance and make them more susceptible to illness. People who get a lot of colds and flu should be further investigated. Usually simple blood tests, e.g. full blood count, are all that is required. This is to check that there is no problem with a reduced white cell count. If, however, you are an athlete with recurrent chest infections and of Maori or Polynesian heritage then the doctor should be suspicious of a condition called bronchiectasis, as this is more common in Maori and Polynesian people. Specific investigations including a chest x-ray and sometimes a CT scan are necessary to diagnose this condition. In summary, most of us get through a winter season with only one or two colds, but if they are causing you a lot of strife or time out of the boat then go and see your doctor.



Rowing training for many is all year round and the major winter illnesses - as you would expect - are colds and flu.