Oh, My Aching Back!

You're in good company. From time to time, you and I – and maybe 70 percent of the adult population – complain of back pain. I can deal with a little stiffness getting up in the morning or creakiness when I bend over to pet a dog. But when back pain threatens to interfere with a dive trip, I spring into action.

But what to do? Stretching only helps in the moment, ibuprofen or acetaminophen don't fix the problem (in fact, by fighting inflammation they also fight the natural healing process), and massage or chiropractic are temporary balms. I'm not that old or out of shape, except in the opinion of my teenage son; I exercise regularly and usually dive with small tanks and just 3 kg of lead. I feel like I've been doing everything right, and yet sometimes my back aches so much after a dive. I need help getting out of my wetsuit. Determined not to be undone on my next trip, I turned to a quartet of knowledgeable doctors, all of whom happen to be veteran divers.

Dr. Richard E. Strain, Jr., is an orthopedic surgeon at Hollywood Memorial Hospital in South Florida who's been diving since "before there was certification." He believes back pain is universal. "We're a sedentary society," he explains. "We're not out working in the fields anymore." But, he adds, "the single most important thing to realize is that 99.9 percent of back pain is not serious – and I'm shooting low."

Dan Nord, Director of DAN Medical Services, agrees. Based on calls to the DAN Diving Emergency Hotline, he says that serious back pain is not a common complaint among divers. "We get the occasional call from someone asking if his back pain might be decompression sickness [DCS], but in general, back pain isn't one of the hazards of diving," he said. "In fact, when divers with back pain get weightless, they often find relief."

And yet a review of medical statistics shows that back pain is the second most common reason people see a doctor in this country (the first being the common cold). It's the third most frequent reason people have surgery and the number one cause of disability for workers under the age of 45, according to the Agency for Health Care Policy and Research (AHCPR), a governmental group that oversees medical practice guidelines.

One percent of the population is chronically disabled by back problems, and at any given time, that same number can be found completely out of commission. The AHCPR estimates that between disability payments and medical and social costs, the annual price tag for this collective problem is at least €15 billion, and that's a conservative estimate.

As Above, So Below

If a high percentage of the general population suffers from back pain, it follows that, with divers, a similar percentage does, too. Despite the weightlessness, there are certain behaviors, activities and movements inherent to diving that can exacerbate back (and neck) discomfort. "If you believe in evolution," Dr. Strain tells me cautiously, "we evolved to walk on land, not swim in water with a tank on our back and big fins that torque the body unnaturally. As a result, you would expect the muscles to have trouble with it (diving), and they do."

When we're diving, he continues, we're in a different environment, and the body is being "loaded" in a way it's not accustomed to: the forces are different. Anytime we get away from normal evolution (i.e., regular use of our backs), we're going to stress certain muscles. When we're diving we're not standing upright and we're not under the influence of gravity; and because we've got a heavy tank on our back and weight around our waist when we're topside, physics is working differently on us.

Dr. Neal Pollock, research physiologist at the Center for Hyperbaric Medicine and Environmental Physiology at Duke University Medical Center, agrees and adds: “Another factor to consider is excess weight. This has to be countered by more air in the buoyancy compensation device; this in turn increases the forces favoring stresses to the anterior curvature of the spine.” “You might be weightless, but we’re not designed to swim with big flippers on,” Strain said. “And that tank on our back will keep moving till we have to slow it down. There’s always an inertial load on the spine if it’s moving. Remember, when you’re diving, you’re doing things your body isn’t used to. If you violate state or federal laws, you might go to prison, but you can never violate the laws of physics.”

David Dornfeld, D.O., an osteopath in Middletown, N.J., is a specialist in sports medicine and musculoskeletal disorders. He’s also been diving for 13 years and treats a lot of hard-core New Jersey wreck divers. From his experience, he speculates that back pain among divers is slightly more common than among nondivers, mostly because they carry heavy tanks and get in and out of the water with heavy gear. This problem is easily remedied.

On the boat, he says, you should walk to the back unencumbered and let the divemaster carry your gear and hand it to you. Put it on while seated, then stand up and do a giant-stride entry. If done properly, a giant stride puts a little less trauma on the body than a back-roll entry, and almost no strain on the back because everything is pretty well tucked. With a back-roll entry, when you rock back, the tank is forced into your back and can cause some cervical or thoracic back strain. When getting back onto the boat, Dornfeld advises his patients to remove their equipment in the water and hand it up to the divemaster.

While back pain isn’t inevitable with diving, neck problems might occur because the neck is always hyper-extended. Both Dornfield and Strain doctors explain that our backs have a natural curve when we’re horizontal in the water. If we were to lie perfectly flat, our head and neck would face down. But to see, we have to raise the head about 50-60 degrees, which fights the natural curve. Over long periods of time, this hyperextension will cause the lumbar spine to compensate to accommodate the position. But there’s not much we can do about it, considering that we’re down there to see things, not practice the dead-man’s float. And if we happen to be diving in a strong current, hovering in a cave or cavern or fighting to ascend or descend an anchor line, this can put even more strain on our neck, shoulders and back.

Guy Dear, M.D., DAN’s Associate Medical Director, believes that back pain associated with diving is mostly related to the offloading in the water of any postural muscular tension that may have developed on land. “When swimming and trying to look forward – at the reef, one’s buddy, that shark – the diver hyper-extends the neck, and the rigidity of the BCD/tank combo pushes the available parts of the back beyond what might be possible or comfortable when dry. This is in addition to carrying much heavier weights around topside than one is used to on a daily basis, up and down ladders.” To counter it, he suggests curling up into a tight ball several times during the first dive to help prevent the back pain later that day.

Easy Fixes

In addition to staying fit to dive, we can do some simple things on land and in the water to minimize our chances of getting, or worsening, back pain. For starters, says Strain, “the more activity one does, the better. Good body fitness is associated with lowered likelihood of having pain.”

While diving: The more skilled you become in the water, the more you’ll decrease your chances of back pain. Better buoyancy control means you can wear less weight, which reduces the load on your back and hips. An integrated-weight BCD might help as well. Be sure, though, to take into account the environmental conditions you’ll be diving in to assure you have the proper exposure protection. Improved air consumption rates means you can dive with a smaller tank, further reducing the load on your body.

Topside: The four biggies are exercise, stretching/bodywork, diet and hydration. Keeping the body fit and limber, especially the core (lower back and abs), is essential.

Dornfeld is a stickler for a good diet. “Essential fatty acids (EFAs), like fish oil, help fight inflammation,” he said. “It’s like putting WD-40 (lubricating oil) on a squeaky door.” He likes products by Carlson Labs; studies show its products contain low to no mercury. His recommendations:

- 3000 mg./day fish oil or a teaspoon a day of cod liver oil;
- glucosamine (1500 mg.);
- chondroitin (1200mg);
- vitamin D (400 mg.);
- vitamin E (400 IU) – but make sure it’s from mixed tocopherols. For insurance, he suggests everyone take a good multivitamin, ideally with 200 mcg. of the antioxidants selenium and 120 mg. of CoQ10. Dornfeld’s bottom line: “Don’t eat a lot of crap, don’t smoke, and don’t drink before you dive.”

Strain adds that drinking plenty of water is essential to reduce your risk of DCS and back pain. “If you like sports drinks, dilute them 4:1 because what you really need is water.”

And for that .1 percent…

I’ve focused on nonserious, acute back pain because that’s what most of us suffer from. And yet for that small minority, certain protocols must be followed. Dan Nord explains that for people with chronic pain or serious back injuries, the rule of thumb is to avoid diving until the pain is resolved or well under control. “People have to realize that sport diving, with the bending, climbing and lifting, could lead to further injury, especially if one is not physically fit or has a weak lower back,” Nord said.

Another important consideration for a diver with back pain is the ability to distinguish normal back discomfort from DCS symptoms, even though back pain isn’t usually a symptom of DCS. There is a rarely seen phenomenon called spinal cord DCS, however. It’s rare but when it does occur, it’s acute, warns Nord. Spinal DCS usually manifests with movement difficulties involving the lower extremities; it can interfere with bowel and bladder function; and it presents a higher risk for long-term disability.

All that said, it’s usually a good idea for people with chronic or serious back pain to establish a baseline of pre-existing symptoms before diving. This way, if DCS is ever suspected, attending hyperbaric doctors will have all the information they need to distinguish pre-existing back pain from a dive-related issue. Unless you’re talking about herniated disks or pinched nerves, low back pain will get better, says Strain. “Here’s the ‘superstitious’ part: a person always thinks the last thing he did before the back got better is the thing that ‘healed’ it,” he said. “The most important thing is continuing your normal activities.”

Thanks, doc. I think I’m ready to book that next dive trip now.

Exercise Your Right to Be Pain-Free

Dornfeld says that most muscle strains and spasms occur when climbing up the ladder, which is hard work after being neutrally buoyant for 45 to 75 minutes. Consequently, the better shape you’re in the less your chances of injuring yourself or exacerbating pain.

Daily stretches to stay limber, and upper-body strength training are helpful for anyone. But bringing the same weekend-warrior mentality to your workouts as some to do to their annual dive trip will backfire. Make moderate exercise a part of your daily life. Strain adds that it’s not always the back muscles that cause the trouble, it’s weak abdominal muscles. When the abs are weak, the back muscles can take on the

extra load. Here are suggestions from Dornfeld and Strain:

- Before you get out of bed in the morning, lie on your back, knees bent, heels one inch from your buttocks. Rock your knees over to the right side, hold 30 seconds, then rock to your left side. Do five on each side. This stabilizes the pelvis and the musculature in the area and gives a mild stretch, to reduce trauma later on.
- While still in bed, keep one knee bent, pull the other to your chest and hold one minute, then switch. This stretches the hamstrings and buttocks.
- With knees bent, do gentle pelvic tilts by raising your buttocks, slowly bring it down, then arch your lumbar spine, and rock back and forth in a slow, easy motion.
- Roll over onto your stomach and prepare to stretch your hip flexors. (In diving, we stretch our hip flexors, so we should exercise them when not diving to keep them in good shape.) Lift one leg, extending your hip, and hold 15 seconds; switch. Repeat 10 times on each side.
- To get up, roll to one side, drop your legs off the bed, and push with your arms to a seated posture.
- Whenever you have time, do these very good exercises: pushups, cross-country skiing (machines), shoulder flies, anything that strengthens the thigh (quad) muscles.

Balance is important too, which yoga is great for. Pilates is good because it strengthens the back and abdominals, probably the best program you can do, says Strain. But his number one suggestion is still to “do abs, more abs, and, when you get tired, do a few more.”