

OTHER MEDICAL DISORDERS AND DIVING

Dr Fred Bove

Various disorders come up frequently enough that we need to spend a few minutes on each to try to decide what to do when somebody walks into the office with such a problem.

The first two are highly controversial subjects in the United States. They have generated a tremendous amount of disenchantment with the diving medical community and an awful lot of hostility amongst the people who want to dive and have either epilepsy or diabetes.

**EPILEPSY**

There is a population of young epileptics who are well controlled and who were told by their physicians or neurologists that they really should consider themselves normal and capable of anything that anyone else can do. So they get involved in certain kinds of sport. They are not supposed to play contact sports like football or hockey or anything like that, but they can get involved in some sports and do reasonably well.

The usual problem is the college student who has been well controlled for a number of years and wants to get into physical education programmes as part of his training. He finds available on the college curriculum, a scuba diving course. He has never been stopped from doing things, except playing football or hockey. There is enough forewarning about that.

When an epileptic wants to dive, the approach that is taken is that an epileptic who requires drugs to maintain control is not allowed to dive. That is the standard approach in the United States because of the problems of stimulating seizures with either hyperventilation or hyperbaric oxygen. We will not let a person who is taking drugs for a seizure disorder dive. These people are not a problem.

The problem comes with the person who has had a seizure disorder as a child and perhaps requires drugs for three or four years. The fits stopped as he grew older. When he is seen, he might have gone for five or six years without any seizures or drugs. The question is, how to deal with that person?

John Hallenbeck, who is a neurologist, would opt for not letting those people dive. He is a navy doctor who by occupation is conservative in the diving business, and would not clear that individual. If the person really insists on diving, then he would do an EEG, with the usual hyperventilation stimuli and so on. If the EEG is perfectly normal, and there has been a long interval of no seizure disorder, then that person might be able to dive. Again, we

do not know if there is an added risk for that person in diving. There is not enough experience with such people.

If one were to take a totally conservative approach to an epileptic who was clearly an epileptic as a child and required drugs, who slowly got off drugs and has not had a seizure, one would say no to diving. If he came back and insisted on diving, then I would do the test with the idea of demonstrating abnormal function when there is a good case to keep that person out of diving. I will not clear these people unless the EEG is totally normal with the various stimuli. One could even opt for an EEG with hyperbaric oxygen, which is not a common or standard procedure.

If the individual has been asymptomatic for five years or more, is completely off the drugs and the EEG is totally normal with the various seizure stimuli, then I might approve that person for diving with some depth limitations so that he is not exposed to high pressures of oxygen.

Another problem is the person who has a history of an occasional febrile seizure in childhood and who has never had a fit since then. Those fits are not precursors of chronic epilepsy in most cases.

Dealing with a 20 year old who has never had a seizure since he was three or four and all of which were associated with high fevers, I would not be concerned at all.

So the spectrum goes from no diving whatsoever in a drug dependant epileptic to a hesitant contraindication to diving in an epileptic who is off the drugs but who had a history of epilepsy for a long time, even if five or six years have gone by since stopping drugs. If he comes back, I would get an EEG with hyperventilation and other stimuli. If that is perfectly normal and shows no evidence of a focus developing with the various stimuli, then I would probably allow diving with some limitations, mainly hyperbaric oxygen limitations.

**DIABETES**

Diabetes is becoming more and more of a problem in the United States. There is a large population of insulin dependent juvenile diabetics who are in their late teens, early twenties and beyond who have been told by their physicians that the insulin gives them good control and they should not regard themselves as handicapped in any way. They play sports and do almost anything that they want to do. This generates a problem when they come to take a scuba course. Obviously these people would not even get through the front door of a commercial diving firm. But in the sport diving world we have to deal with the diabetic on insulin.

The diabetic who is not on insulin, who wants to dive, such as the forty-five year old man who is overweight and has a family history of diabetes is no problem. If he wants to

dive he must first lose 50 lbs. Chase them out of the office with a diet and exercise programme. I tell them to come back in six months, 50 lbs lighter for a repeat blood sugar test. Often after the exercise and the weight loss the blood sugar will be normal and the glucose tolerance test will be normal. Then he is not a diabetic any longer and no longer a problem. I have had to do that with some US Navy divers. They are just as inclined to get heavy as anybody else. Occasionally there is one who gets obese enough, and who has a family history of diabetes, that his sugar goes out of control. That scares a navy diver, because they first got into diving because of the extra money. It is easy to motivate a navy diver. The first thing one says is "Your diving career is over unless you can come back in a few months with your blood sugar under control." They get their weight down. Weight loss is a simple solution which is thrown right back to the diving candidate. If he wants to dive he has to lose weight and get his sugar under control. Inevitably an obesity onset adult diabetic will get his sugar under control by losing weight and getting exercise.

The juvenile diabetic is not so easy. This is the diabetic who basically has his islet cells destroyed and fibrosed over a time for whatever reason. These people do not have the opportunity to regain control of their blood sugar by diet or weight loss. They have no, or very few, islet cells, and cannot secrete insulin so they have to have it replaced. Oral agents will not do it, or may do it for a brief period early on, but the long term treatment for these people is daily injections of insulin. The problem with both insulin dependent diabetes and drug dependent epilepsy, is sudden, unexpected and unpredictable unconsciousness underwater which is almost 100% likely to produce a drowning.

Some diabetics argue that they will be alright because "I am diving with a buddy, and I have a syringe of glucagon my bag, and I have a hard candy and orange juice". If the diver had trouble at 70 or 80 feet underwater, it is very difficult for a buddy to give intramuscular glucagon at that depth, even if he has a syringe with him. Things need to be done very quickly to somebody who goes unconscious at depth or that person drowns. What if a diver carries a syringe of glucagon strapped to his leg while he is diving? Who is going to give it to him? All his buddies have to be trained to pull the syringe out, find a bit of bare muscle somewhere and inject the glucagon.

As far as I am concerned the insulin dependent diabetic should not be diving. It generates a tremendous amount of discussion. In the United States there are insulin dependent diabetics who are diving. I have been getting letters in Skin Diver like "My husband is a diabetic (insulin dependent) and the best thing he has done in years is to take up a scuba course. We have written a long disclaimer to NAUI, PADI, or whatever it is and disclaimed any responsibility for the diving organisation, the doctor and anyone else."

In the United States any disclaimer is worthless if they get a bunch of lawyers who are willing to fight the case. They

can always find a hole. They will ask "Did you explain in fine detail that the diabetic might not be able to get glucagon at 77 feet because his buddy was not trained to give the syringe through a wetsuit?" If one has not explained that the disclaimer is no good. One must explain everything properly.

I also get these kinds of letters. "My husband is an excellent diver. He loves his course. He loves diving. Whenever he comes up and gets the shakes we give him some hard candy and in half an hour he is OK." That is an admission that the guy is having trouble. The last letter I got like that was the story about having the syringe of glucagon in the dive bag, with hard candy and orange juice, and if anything happens we will be ready to take care of it. I wrote back and asked what would happen if the problem occurs at 100 feet? What are you going to do? Have you trained the people you are diving with to take care of the sudden unconsciousness in the water? Do you have someone who know how to give glucagon intramuscularly? If you become a little flaky, do they know that it is a hypoglycaemic reaction which they are going to have to give you something for?

Worse than that, some of these diabetics go off on their own on a vacation and end up on a dive boat with a bunch of other people who do not know anything about their medical history. I can imagine the scenario of an accountant sitting in a dive boat and the guy next to him says "Here is this syringe and needle. What I would like you to do if I get a little funny ..." The accountant just screams and runs away.

I have not yet been able to find an argument to remove the absolute contraindication for diving for an insulin dependent diabetic, so I do not think they should dive. I have talked to a number of diabetic specialists in the States, who are involved with sport and athletics, and they all agree that this is the one sport where sudden unconsciousness cannot be tolerated. If a swimmer suddenly becomes unconscious in a pool there is someone to pick him up. But unconsciousness cannot be tolerated underwater.

There are insulin pumps which give a continuous dose of insulin. It is regular insulin, the short acting kind that one gets from one's pancreas. The pumps are programmed to increase the insulin dose at meal times. These diabetics are under fantastically good control. Their whole metabolism changes back to normal. They have a very low incidence of hypoglycaemia reactions. There are even pumps designed to sense the glucose level and respond to it appropriately. The problem of deciding whether a pump supplied diabetic can dive is at least five years away, so we can think about it and be ready for it when it comes along. I think that these people should not be diving even though they have better control than we have now. We do not know about the effects of pressure on insulin pumps. At the moment the insulin dependent diabetic should not dive.

## BLOOD DISORDERS

### Factor VIII Deficiency

I have had one person with a factor VIII deficiency who was under good control with plasma transfusions who wanted to dive. These people usually have a terrible time. They bleed all the time. They develop terrible arthritis and a lot of tissue scarring from haemorrhage. Nowadays they are well controlled with plasma transfusions. A diving instructor called me and said "I have a haemophiliac who wants to dive. He looks pretty good and claims that he is under good control. What do I do with him?" I discussed this with a haematologist and decided that he should not dive because their ability to clot varies a lot. When they are near the point where they need a plasma infusion they start to have bleeding problems. These people do not just bleed from a cut. They get subdurals or massive haemarthroses and scarring of the joints and things like that. Patients with bleeding disorders and that includes patients on anticoagulants, should not dive. It is a rare dive that one does not come back with blood leaking out of the body. Those minor traumas would be magnified. Also the blood trauma that one gets from diving, that we can disregard most of the time, can be lethal to someone with a bleeding disorder. So those people should not dive.

### Abnormal Haemoglobins

There are patients with anaemia. I do not mean the guy who just lost three litres of blood from an ulcer, but the chronic anaemias from abnormal haemoglobins. We have a reasonable population of sickle cell disease in the United States. People with sickle cell trait will be cleared for diving in the military, as long as their haemoglobin is acceptable. Their haemoglobin is usually between 11g% and 13g%, compared with 13g% to 15g% in the normal population. The decision made by the military was in fact a political decision, not a biological decision, because it was claimed that there was racial discrimination against the people with sickle trait in both aviation and diving. So the powers that be decreed that people with sickle trait would be allowed to dive. Now there are people in the United States Navy diving with sickle trait and they seem to have no problems.

The problem is if they become hypoxic, they may sickle and have a crisis or renal failure. So far that has not happened in diving. I think there was one aviator who had a sickle crisis at high altitude in an aircraft, in spite of the politicians, who claimed that there would be no problem with sickling at high altitudes.

What does one do with a budding sport diver who has a haemoglobin abnormality? He maintains a haemoglobin of perhaps 11g% or 10g% and wants to dive. We have seen a number of people like that. Sickle trait people do quite well diving. Most of them do not have problems with sickle cell disease.

With any of the variants that have small amounts of abnormal haemoglobin with a majority of A type

haemoglobin, when the haemoglobin levels are quite reasonable, there does not seem to be any reason not to dive. There are people who have a haemoglobin of about 11.5g% to 12g%, which is about 1.5g% below normal, who dive and do not seem to have any problems. I recently cleared a Navy diver with spherocytosis which produced a haemoglobin level of about 11.5% to 12g%. He has had his spleen out and has mild chronic anaemia. He was a vigorous young man who was one of the champion athletes of his area, and he did fine in diving.

One can make judgements in terms of the haemoglobin abnormalities based on what the haemoglobin is and what the person's exercise capacity is. The military were more or less forced to approve sickle trait people for flying and diving. As there have been no problems, I think it is quite reasonable to let such people go sport diving. However, if the haemoglobin is low, 7g% or 8g%, I would not allow diving. I think the cut off should be around 11g% of haemoglobin. Below that one starts to get incapacity from limitations to exercise.

## RENAL DISEASE

The next problem would be the renal hypertensive patient and the renal disease patient. They are problems because there are occasional persons with mild chronic pyelonephritis, or chronic glomerulonephritis with mild abnormalities of renal function. Most of these people are doing quite nicely. They are going through college, playing sport, and all the rest of it. Then they hear about scuba diving and want to do it. My renal friends tell me there is no real reason to worry about diving in somebody who has got mild renal disease whose blood urea nitrogen (BUN) or creatinine is not elevated, or is minimally elevated, that is, the BUN is below 20. As long as there is reasonably good renal function, the renal folks tell me one can let these people exercise and dive. There is no reason why diving, per se, would affect the kidneys.

## HYPERTENSION

The hypertensive patient is a different problem. The uncontrolled hypertensive can get massive blood pressure responses to exercise. These people can get some degree of heart failure because of the high pressures that occur during exercise. A person with a blood pressure of 130 or 140 over 95 at rest might be untreated because the local physician will tolerate small elevations in blood pressure. When he exercises he may push both systolic and diastolic pressure very high, to a systolic of 220 or 230 over 140. That person runs the risk of exhaustion and in fact, of heart failure, as the blood pressure goes extremely high during excitement and exercise. So anybody who has uncontrolled hypertension ought to have their hypertension treated. They should not be diving unless their blood pressure is under control.

How do you get their blood pressure under control? If the entire autonomic system is suppressed with blood pressure

medicines so that the person has to get up out of bed over a six or eight minute period to avoid a faint because he cannot respond to exercise with a tachycardia because of high doses of beta blockers and his vasoconstrictor capacity has been wiped out from a few muscle relaxants, or other alpha adrenergic blockers, he cannot tolerate two things. He cannot tolerate significant fluid shifts in the vascular space, for example sudden head up position, as he will pool blood in the lower extremities and faint. He cannot tolerate exercise because the entire autonomic system is more or less paralysed to keep his blood pressure down. These people will faint sometimes because it is not as easy to remember to do things slowly when one is in a diving environment as it is when one is sitting at home.

So to the hypertensive who is uncontrolled should be controlled. If they require massive amounts of autonomic blocking drugs they should not dive because they can handle neither the exercise nor the sudden positional changes.

The question is, then, where to draw the line in drug therapy? It is a tough line to draw but we have to come up with some guidelines. The first thing I would do would be to take the person off salt, give him an exercise programme and tell him to lose weight, if he is overweight. A small percentage of mild hypertensives, probably 10%, will get good control from that. When a person is under control, then one can clear him for diving.

The next step is still a diuretic, although the consensus is now moving towards beta blockers as an initial drug. To the no salt, exercise and weight reduction one adds a diuretic once a day. If that is all that is needed to get blood pressure control that patient is probably fit for diving, because that does not affect autonomic control very much. All it does is reduce the blood volume a little bit. It does something to the smooth muscle of the arterioles that has something to do with the sodium and potassium balance. One has to watch potassium levels and make sure they have a proper potassium intake. If the person only requires a diuretic and the other non-drug measures to control his hypertension, he can have a good exercise tolerance and can dive.

What is done next is to use a drug that blocks some component of the autonomic system. Usually in younger people we would use the beta blockers. That is probably the next most benign thing we can do for hypertension. Use a diuretic, weight control, salt restriction and exercise plus beta blockers. The beta blocker is an interesting drug because in small doses it will control blood pressure and will not completely inhibit the autonomic system. Somebody on small doses of Propranolol will be able to play tennis or take whatever exercise they want to do and they are not inhibited. The only things that are inhibited are their heart rate response and their blood pressure response. In this case we have a few people diving who are on diuretics and small amounts of beta blockers who have a good exercise tolerance. I usually insist that someone like that get on a treadmill and have their exercise tolerance quantitated if they want to dive. Again the motivation is to

prove that the individual can handle it. For the hypertensive who is on anything more than a diuretic, I do an exercise test to find out what his capacity for exercise is. Anybody who is on massive amounts of anti-hypertensive drugs should not be diving because they do not have good autonomic control.

There are a lot of people who suffer from hypertension because they consume too much alcohol. I advise all patients to reduce salt and to cut out alcohol for a while. Then, oftentimes, the hypertension will go away. With uncontrolled hypertension there should be no diving until it is under control. If massive amounts of any hypertensive drugs, with significant inhibition of the autonomic system are needed, then they should not be diving. With the non-drug therapy and a diuretic, diving is allowed. Those on non-drug therapy plus a diuretic, plus small amounts of beta blockers, should be tested on a treadmill for exercise tolerance. If they have a good exercise tolerance then they can be cleared for diving.

## PHYSICAL HANDICAPS

There is a move afoot in the United States to start incorporating diving as a sport modality and therapeutic modality for the physically handicapped. By physically handicapped I mean the paraplegic from a traumatic injury of the spinal cord and the amputee with part of an extremity missing, usually a leg. These people are getting into diving all the time. There are some efforts to organise diving for these people so that they can use it as therapy. They claim that it is one of the times that they can feel the freedom that they otherwise do not feel, being confined to a wheelchair.

### Paraplegics

What can one do with these people? Obviously they cannot do any type of certification because most of them are wheelchair bound. One would have to have three or four assistants to help him out of his wheelchair, into the boat, dress him and throw him overboard and help him back in.

Obviously they cannot just dive with everybody else. These people are being trained to dive in a very constrained and controlled environment, in a pool, with instructors who are combined instructors and physical therapists. In the pool they swim around and gain some freedom. I have already seen some efforts at divers going into the water in a wheelchair, and then just floating up out of the wheelchair and swimming away. But they cannot do this on their own. One cannot wheel a chair down the beach and keep on rolling into the water and swim away.

This kind of diving is being done and is getting to be a very well accepted therapeutic modality for these people. One may be asked to clear a group of these people. All the things that would inhibit the normal person hoping to dive still count. I consider that paraplegics should limit their diving to a very controlled environment with people helping them.

Amputees

Amputees are a different category. A lot of amputees who dive have either below the knee or below the hip amputation from trauma and they do quite well. They walk onto the boat with their wooden leg, slip a flipper on their good leg, and they swim safely. They have to learn slightly different swimming skills. Many can outswim others because they seem to put more punch into it. An amputee has to be physically fit because there is more exercise involved in walking and swimming with only one leg. I do not think that they could do the kind of climbing that one might need to get to certain dive sites. But the limitations would be physical limitation on the location. Once they are in the water they do very well. If an amputee has no other problems, there seems to be no reason to disqualify him from diving.

## PREGNANCY

Pregnancy is not a medical disorder but it is a contraindication to diving. A workshop was held by the Undersea Medical Society about a year and a half ago, on diving and pregnancy. It was made up of a number of people who were either interested in the basic physiological aspects of pregnancy or the clinical problems. They concluded, both from some cursory, but reasonable, clinical observations and some research on gas exchange in the foetus compared with the mother, that a woman who is pregnant should not dive. There seems to be differences between gas exchange in the foetus and the mother such that the foetus might bend when the mother had a safe dive. Also hyperbaric oxygen is known to cause damage to foetal tissue and even though one could not prove that a woman diving to 200 feet would damage the foetus, it is not reasonable to find out by sport diving exposures. The advice to women who dive, is that they should not dive until the pregnancy is over.

## Question:

Have any divers died from insulin caused hypoglycaemia? Do diabetics have a higher chance of developing decompression sickness?

Dr Fred Bove

We had a death in the Atlantic five years ago from an insulin reaction during a dive. That is still the most important reason for debarring diabetics from diving. It is reasonable to expect that the long standing diabetic who is known to have microvascular disease is going to have problems with gas elimination because they do not have the tissue perfusion that the normal person has. Their vascular system is much different. So one would expect that they would be more prone to decompression sickness.

Question: Dr Janene Mannerheim

Should someone who has almost completely recovered from a traumatic spinal injury dive?

Dr Fred Bove

That is a good question. A diver, commercial or sport, who develops a spinal cord bend and ends up with residual neurological damage, is taken out of diving for good because there is a high risk of a recurrence of neurological injury and permanent, severe spinal damage, with further diving. I think that a person with traumatic injuries to the cord with partial recovery so that there is reasonable motor function and some sensory abnormalities is in the same position as the diver who has been bent and has a partial spinal cord lesion. It seems to me that person ought not to dive because of the risk of further injury to the cord.

If you have residual neurological signs of cord injury there is an enormous amount of pathology in that cord, much more than we would suspect looking at the clinical picture. If you add more damage to that pathology, presumably the compensatory mechanisms that are functioning can be wiped out and one gets a catastrophic change of function by a small addition to the injury to the cord. My colleague John Hallenbeck, who is a neurologist, thinks that way. The other person who is doing a lot of work on that is Tommy Palmer in England who is a neuropathologist. He is convinced that whenever there is a cord bend, even though there is a full recovery, there is a fair amount of residual permanent pathology that is not detectable clinically. When these people have a post mortem, later on, one finds scars in the cord which represent permanent damage to the cord which has been compensated for.

People argue that once the cord has been hit it is prone to be hit again and if it is hit again then you are not going to get a small change in function you are going to get a large change in function.

My advice to that person who has had a traumatic spinal injury and still has neurological symptoms is that he should not dive.

And that is basically the same statement I would make to someone who has had a neurological bend who has residual neurological abnormalities.

A commercial diver or a military diver who gets neurological decompression sickness and is treated with full recovery goes back to diving in a month. We are beginning to understand that there is permanent residual pathology in the cord. If there is a neurological deficit after treatment that person is out of diving for good. I think the same concept probably holds for traumatic spinal injury.

Dr Ian Unsworth

Would you agree that patients who are on high doses of steroids, for example, following successful renal transplantation, should be advised not to dive?

Dr Fred Bove

Yes, I think they should not dive.

Dr Ian Unsworth

Do you think there is a danger of synergism between venous gas emboli and steroids increasing the risk of femoral head necrosis?

Dr Fred Bove

These people have a reasonably high incidence of aseptic bone necrosis because of steroids. I had an interesting diver come to me who had a seminoma which had metastasised to his lungs. He was a 45 year old millionaire. As a young guy he had made a lot of money in real estate. He came in with no hair, greyish, with burns on his chest. He had been treated for a fairly bad seminoma. The lesions in his lungs were smaller than they had been and he was on chemotherapy and steroids. He wanted to come down here on a trip around the world and he had been told that he had about a 5% chance of surviving. I just said do whatever you want to do and he did. He wrote me a letter and said it was the nicest trip he had had in his life. He was writing from the Sloane Kettering in New York where he was because of pulmonary metastases. I do not think he is alive today.

Dr Bob Paddock

You did not comment on hearing problems. I recently examined an 18 year old who had a total hearing loss in one ear and a perforated drum in the other with a 20% loss. I rejected him for diving. He went to another doctor, an otologist, but not a diver, and he was passed by the otologist.

Dr Fred Bove

It is amazing that anyone would clear somebody for diving with a chronic perforation. Even non-diving ear, nose and throat specialists know that one should not let somebody submerge their head in water when they have a chronic perforation. That otologist is malpracticing in the United States. Anybody with a chronic perforation should not dive because they will always get water in the middle ear and infection often follows.

Joe Farmer at Duke University tells me that chronic perforations are not because of poor healing in the drum but because of inadequate Eustachian tube function. The perforation is chronic because the person cannot ventilate the middle ear normally. There are ways to treat that. Anyone with a total neurological deficit of hearing in one ear is not fit to dive because if anything happens to the hearing in the other they are 100% deaf, and that is a real problem. Those are two important ENT considerations that do not come up very often in the States because everybody agrees with them, except for an occasional otologist.

Question:

Should people who have had prosthesis placed in the middle ear dive?

Dr Fred Bove

There are people who have tympanoplasties and artificial bones placed in the middle ear. To me that is the ultimate in microsurgery, for someone to grind up a couple of pieces of plastic, shape them like middle ear bones, put them in place, put a new tympanic membrane on and restore some hearing. It only takes one little ear squeeze to wipe the whole thing out. In the States the ENT people tell their patients that the insurance will only pay for the first operation (about \$1,800 an operation) so if you want to go diving, put 1,800 bucks in your piggy bank, because when that ear is damaged, nobody else will pay for the repair. They can dive, but they run a high risk of wiping out all that nice surgery. It is not going to hurt the surgery if the person has good Eustachian tube function and knows enough to keep his ears properly cleared.

#### WHAT SHOULD WE ASK FOR IN A SPORTS DIVER MEDICAL?

John Knight

The cartoon (Fig 1) which appeared on the front of the SPUMS Journal (July-September 1981) is horrifyingly true. Often somebody who has a physical defect not compatible with safe diving goes to a knowledgeable diving doctor and is knocked back. He then goes to another doctor and suppresses the information about asthma or angina. He cannot suppress being overweight or hypertensive but he can find some doctor who does not know anything about diving. I think everybody would agree that sports divers do not necessarily have to meet the same high standards of physical fitness required for military and commercial divers. For one thing, many of us are very much older than the working commercial or military diver and we do not seem to have more than our fair share of accidents. I approached the idea of producing a diving medical suitable for sports divers by making a list of what I thought were absolute contraindications to diving. (Table 1)

#### ABSOLUTE CONTRAINDICATIONS

I decided that conditions that were likely to cause you to go unconscious underwater were a complete bar to sensible people going diving.

Conditions likely to cause pulmonary barotrauma make it extremely unwise to go diving, and conditions that cause breathlessness on exertion make it stupid to go diving. Then there are various ear conditions that make diving impossible without risking hurting oneself.