

regard to diving, but there are a few others perhaps I could touch on. It would not have been practical for me to have gone through a four to six week course offered by a scuba shop because it takes time and experimenting to go through the learning process of how to solve these problems, a process I am still going through. A crash course in a local shop may not allow time for this. Special problems in one individual in a class may become a frustrating burden to the instructor. That is what makes the Handicapped Scuba Association unique. It is designed not only to teach scuba but to tackle those problems as a challenge, not a burden. I have not forgotten those extra hours that some capable people were willing to spend with me to help me work out answers to my problems. I have been fortunate to dive with buddies who understand my limitations, which allows me to feel comfortable in the water with them.

For me diving is an exciting adventure. A really important part of what makes it enjoyable is the continued association with HSA members. What makes the HSA such an unusual organisation is that it provides a means for overcoming disabilities. It is not merely a club for the handicapped, it exists for the able-bodied who want to learn scuba. It is good to belong to a club that concentrates on PEOPLE rather than on their disabilities.

This remarkable testimony to the importance of the human spirit in discussing Fitness to Dive has been slightly edited from its original format as a letter. Readers may like to know that the HSA is a Californian Non-profit Charitable Foundation and that all its officers have a physical disability of one sort or another. The aspiration is to teach and promote diving for the handicapped, as well as additional aquatic sports such as sailing and fishing. It is based in California but has chapters in Florida and Ohio and correspondence with groups in Michigan, Canada and the UK. Its basic philosophy is to concentrate on ABILITIES not the disabilities, gladly accepting a great deal of input from pupils. This creates a situation where the instructor frequently finds himself in the role of student. It has accepted amputees, paraplegics, quadriplegics and cerebral palsy sufferers. Its classes are unique in that there is a mix of handicapped and able-bodied. This creates a sensitive learning experience for both, as some tasks can be done better by the disabled persons. On completion of training there is entry into the Scuba Diving Club, which runs dive trips for members and others. This is organised by the HSA Vice-president, Larry Thompson. Larry is a partial paraplegic who has nearly completed his NAUI Assistant instructor course. The address of HSA is:-

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THE DIVING CANDIDATE WITH A HISTORY OF ASTHMA

CG Daugherty

The history of asthma is considered disqualifying for diving, even if not currently active or inactive for a considerable period of time. It is disqualifying by the US Navy, the North Sea regulations of the United Kingdom and Norway, and this also represents the opinion of the majority of physicians in the United States who are knowledgeable in diving medicine. The following factors should be considered, particularly if the diagnosis may be somewhat in doubt:

Safety in the Workplace

There is a general requirement for an employer to maintain a safe, healthy workplace. The employer cannot knowingly hire someone who is physically or medically unsuitable for the proposed job. The employer has a legal requirement to have prospective employees examined in a fashion sufficient to exclude persons having conditions which would render them unsuitable for the job in question. Thus, a history of asthma would make one unsuitable for the occupation of commercial diver.

Provocation of Asthma

Asthma may be defined as a condition in which the airways of the lung narrow and become smaller in response to stimulation which has no effect on ordinary people. Although the person may not have had an attack of asthma in many years, the potential still exists. As this reaction may be caused by situations which do not usually affect ordinary people, this means an attack could be triggered under what are considered to be normal working conditions. This is certainly true of diving, where divers are required to breathe dry gas mixtures for prolonged periods of time. This will typically cause tightness in the chest, coughing, and mild chest discomfort of a temporary nature. This is exactly the sort of exposure that could quite possibly provoke an attack of asthma in a susceptible person.

Diagnosis of Asthma

There may be some question as to how definite the history of asthma is. In infancy and early childhood, there are common virus infections of the chest which can produce wheezing and are sometimes mislabeled as "asthma". In some cases there may not have been a formal medical diagnosis of asthma. Rather the person may simply have been told by his parent that he had asthma early in his life. This may have been based on an episode of wheezing which appeared to represent asthma to the parents, or perhaps to the person's own physician. The question can sometimes be difficult, particularly in young children. A few appropriate questions to one's parents or family

physician may help clear up the matter. Generally, asthma does not consist of a few illnesses with wheezing early in life, but rather consists of repeated episodes of wheezing throughout childhood or even into adolescence and young adulthood. Where there is a definite, unmistakable history of asthma earlier in life, the question should be considered settled at that point. There is no benefit for someone with a clear-cut history of asthma to consider the idea of attempting to enter the field of commercial diving. An attack of asthma while diving, under hyperbaric conditions, could prove fatal to the diver.

Testing for Latent Asthma

There may be cases where genuine doubt exists as to the correctness of an earlier diagnosis of asthma. For those willing to go to the trouble, there are further tests which can be done and are reasonably specific to this subject. It should be emphasized at this point that anyone who has a history of asthma, even if it is only a suspicion, now bears the burden of proving that he does not have asthma. In the absence of accurate information to the contrary, a history of asthma alone is sufficient to disqualify from diving. First, the person should have a standard pulmonary function test (spirometry) performed. The results of this test should clearly be within the expected range. Following this, the test should be repeated after the person has received a bronchodilator. Comparing the results of the two tests, there should be no significant change on the pulmonary function study obtained after receiving the bronchodilator. While there is a tendency for a person to show slight improvement on repeated tests due to the effect of practice, definite improvement on the second test may be taken as circumstantial evidence that the patient is an asthmatic or has some asthma-like narrowing of the airways in the lung. If this first before-and-after test shows no suggestion of asthma, a second test should be done. This involves the inhalation of methacholine or histamine. These compounds will cause no reaction in ordinary people when given in extremely small dosage. In asthmatics, a definite reaction is usually provoked and a positive result on this test is usually taken as an indication of latent asthma. Both of these tests can be done in any well-equipped pulmonary laboratory. It should be emphasized that, in the case of the second test, the compound must be administered by very finely-calibrated equipment. In addition, the reaction produced can be rather severe and therefore the test should not be done in any laboratory that is not properly equipped. If both of these tests produce no sign that the patient has asthma, it could reasonably be concluded that the earlier history of asthma was probably in error and a future in diving could be contemplated.

While it is certainly true that a person with an incorrect diagnosis of asthma can participate in diving with perfect safety, a person who does have asthma could very possibly have an accident which would result in permanent disability or death. It should be obvious

that rigorous, thorough testing in order to resolve the question is of considerable importance.

WHEEZY DIVER

John Betts

Probably the most common problem in my postbag of reference cases is the young asthmatic. No other condition needs such a delicate balance of judgement by the examining doctor or exemplifies so much the differing philosophy of amateur and professional diving.

Asthma is caused by contraction of the smaller bronchioles in the chest, which close down and restrict the flow of air to and from the alveoli, thus causing the characteristic "wheezing" and producing shortness of breath.

In young people it can result from allergies to dust or pollen, from emotion, (particularly if unpleasant), infection or exertion and in many cases from no apparent cause.

The danger while diving is two-fold. Minor crises are inevitable in even the best ordered diving and a panicking asthmatic who develops an attack when difficulties arise may turn a problem into a major crisis.

Secondly the narrowed bronchi will restrict the easy expansion of compressed air in the chest while surfacing from a dive, thus producing lung rupture and cerebral air embolism, particularly if an emergency ascent has to be made.

So we do not accept anyone who has any permanent degree of asthma and, because the drugs used in treatment also affect heart and circulation, anyone who has to take any pills regularly for his asthma. Ideally, the diving asthmatic should have infrequent attacks and not take any regular treatment.

In recent years, however, two new treatments have appeared. One, Intal (sodium cromoglycolate) is a British discovery, an inhaled powder which stops the irritant reacting with the bronchioles.

The other is also inhaled and is a mist of particles of steroids, a drug which switches off the body's reaction to allergens and when used in this way is not absorbed into the body. The same drug has been used for many years by mouth for asthma but has so many other effects on the body that it rules out diving.

The use of these types of inhalation may produce a completely normal chest while they are taken regularly, thus allowing sufferers to dive with safety.

It is in this area that the differing requirements of amateur and professional diving become evident.