

diving medicine

DEPRESSION AND DIVING

DEPRESSION IS A MASSIVE TOPIC AND CAN MEAN ANYTHING FROM A FEW MINUTES OF FEELING DOWN TO A LIFETIME OF DIFFICULTIES COPING. MY THREE AND A HALF YEAR OLD DAUGHTER MIGHT SAY "I'M DEPRESSED" AFTER SHE SPILLS HER MILK, WHILE THE YOUNG MAN WHO JUST JUMPED OFF THE BRIDGE AND COMMITTED SUICIDE MAY VERY WELL HAVE SAID THE SAME THING JUST BEFORE HE JUMPED. THE WORD "DEPRESSED" IS SO COMMONLY USED IN THE ENGLISH LANGUAGE THAT IT IS VERY DIFFICULT TO DEFINE IT WITHOUT USING THE WORD! FOR EXAMPLE, IF YOU ASK MOST PEOPLE TO DEFINE DEPRESSION, YOU WILL GET SOMETHING LIKE "DEPRESSION IS WHEN YOU ARE FEELING DEPRESSED". THIS IS NOT PARTICULARLY USEFUL.

Several excellent articles have been written on depression and diving that are available on line (Google 'depression and diving'). Therefore, in this column I am not going to focus on the medical diagnosis of depression, nor am I going to review in detail the multiple drugs that can be used to treat depression. Instead, I want to look at the more general topic of depressed mood and diving. The following are simply my personal ideas and understanding. They should not be taken as "scientifically proven" or "fact".

Fitness to dive is a complex, ever changing situation and I firmly believe that every diver should ask themselves, before every dive, "am I fit to dive right now". One element of this evaluation has to be "how am I feeling and how well am I thinking?"

How we feel is the result of many complex factors. On the internal, biological side people with higher levels of serotonin tend to feel better than people with lower levels. If you measure the levels of serotonin in people with serious symptoms of depression, they tend to be low. If you give the person a drug to raise the levels of serotonin, they tend to feel better. At the same time, every measurement in biology falls on a "bell curve". What this means is that if you measure anything in 100 individuals, most will have a level in a fairly narrow range, but some will have a level above this range and some will be below.

If you measure the level of serotonin in 100 people who are not experiencing any symptoms of depression, most will have a "normal" level, but some will have a higher level and some a lower level. This level is determined by genetics and therefore some individuals will be more likely to develop depression as a result of their genetic makeup while others will be very unlikely to develop depression, also as a result of their genetic makeup. Most of us will have an "average" risk of depression as a result of our genetics. Unfortunately, depression is so common that at any given time, approximately one person in seven will be experiencing depression and almost all

EXERCISE DRAMATICALLY INCREASES THE EFFECTIVENESS OF ANTIDEPRESSANT MEDICATIONS AND SOME DATA SUGGESTS EXERCISE MAY BE MORE EFFECTIVE AT TREATING DEPRESSION THAN DRUGS!

of us will experience at least one serious episode of depression in our lives.

Life experiences also influence our levels of serotonin, and our feelings. Individuals who have a "nasty" experience (a parent or child dies unexpectedly) almost always experience

some feelings of depression and this is a perfectly normal response to the situation. Their levels of serotonin decline for a while but as they work through the situation their levels of serotonin rise back to normal, and their mood returns to normal. If this period of adjustment extends beyond a "normal" time limit (typically 3 to 12 months depending on the culture), the person may need some assistance dealing with the tragedy.

So far I've painted a relatively simple picture that implies mood is a direct result of the level of serotonin. Therefore, you might think that we should all take serotonin raising drugs and we will feel great. Unfortunately, life tends to be much more complex than that! All of the drugs that raise the levels of serotonin have side effects. Many things other than serotonin influence how we are feeling and most interestingly, if you treat people who are experiencing serious symptoms of depression with psychotherapy (without drugs), as they start to feel better their levels of serotonin will also rise back to normal.

Drugs can definitely be used to "prop up" the level of serotonin and help a person feel better. However, if the person stops the drug, they have a relatively high risk of becoming

depressed. Psychotherapy to help them learn how to deal with life more effectively tends to be equally effective and much longer lasting. The optimal treatment for serious depression seems to be to use drugs initially so that the person has the energy and will to undergo the therapy of learning how to

live more effectively. The drugs can then be stopped. Those of you who have been reading my columns for a while will know that I am also a very strong proponent of exercise. Aerobic exercise causes a host of biochemical changes in the body that last approximately 24 hours. Some of these biochemical changes have a major influence on how we are feeling. The levels of serotonin rise but endorphins and other chemicals are also released in the brain. Endorphins are naturally produced by our bodies and are chemically very similar to narcotics (morphine, codeine, demerol and even heroin). These chemicals definitely help us to "feel" better.

For the past several months I have been recovering from shoulder surgery and then a herniated disc in my neck (getting old has its problems, but it is far better than the alternative?). This past week I was finally able to get back into the gym and do some strenuous exercise. The effect on my mood and my work productivity has been amazing. One day I definitely managed to do enough aerobic exercise to release endorphins (runners high), a feeling I have not had for way too many months.

There have been several studies on the effect of exercise on depression. Exercise dramatically increases the effectiveness of antidepressant medications and some data suggests exercise may be more effective at treating depression than drugs! Just remember that the biochemical effects of exercise tend to last only 24 hours. Increased levels of serotonin have been associated with increased fatigue during exercise. It is always important to know that you have the level of physical fitness required to deal with an emergency while diving.

So what does all this have to do with depression and diving?

When you are assessing your fitness to dive, the first question you should ask is "are you a patient"? If your symptoms of depression are so severe that you are currently being (or should be) investigated and treated, you should not dive. Once you have returned to work and normal daily life and are in the maintenance phase of your treatment, diving might be reasonable. The next question you need to ask is "is it safe to dive considering the medications I am taking?" This is a complex topic and I will only give you some generalizations here. Many of the older drugs used to treat depression were sedating (they made you drowsy). Diving requires a very clear head and you must be alert. In addition, narcosis "puts your brain to sleep". Therefore if you are also taking a drug that "puts your brain to sleep", the effect of the narcosis will be much more severe than you expect. If you are taking a drug that can be sedating, even if you do not notice any effects, you should limit your diving to shallow depths. Most drugs used to treat depression have side effects. These side effects often settle down over several weeks. You should not dive until you have been on a stable dose of the medication for at least three months.

Many of the older drugs and some of the newer drugs increase your risk of having a seizure. Obviously a seizure while you are diving is likely to be fatal. In addition, higher partial pressures of oxygen increase your risk of having a seizure. Therefore, drugs that increase your risk of having a seizure should not be taken while diving, and the partial pressure of oxygen should be kept as low as possible (no Nitrox and only shallow depths). Serious depression can be associated with periods of elevated mood (euphoria or mania). This is very dangerous in diving as the associated lack of judgment makes it highly likely

that you will do something "stupid" and kill yourself or your partner. Any history of significant euphoria or mania is a contraindication to diving. When a person who has been taking medications for depression reduces the dosage or stops taking the medications, there is an increased risk of the depression returning. Therefore, a person should not dive until this risk has returned to baseline. For the newer

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short acting antidepressants this is about 6 weeks.

Some of the newer drugs used to treat depression increase the risk of bleeding. Spinal cord DCS is often associated with bleeding into the cord. Therefore, you should limit your dives to profiles with a very low risk of DCS if you are on any medication that increases your risk of bleeding. You also need to be very careful to avoid barotrauma as most forms are associated with bleeding.

The bottom line is that even if you are not "clinically depressed," all of us experience a wide range of moods all the time. Before every dive it is important to evaluate your mood, your level of functioning, and decide if it is reasonable to do the planned dive. Diving requires us to

be clear headed, relaxed, able to concentrate and to make good decisions. Sustained concentration is critical as a diver has to keep track of depth, bottom time, no decompression limits, air supply, location, buddy status, etc. throughout the dive. Emergencies happen while diving and you must be capable of dealing with an emergency.

Obviously, you should never dive if you are feeling suicidal (several diving fatalities appear to have been suicide). Most individuals with "clinical" depression should not dive until their symptoms have completely resolved, and they are on a stable dose of medication with no side effects. Then diving should be limited depending on potential medication problems.

