



SCUBA DIVING APPLICATION FOR ALL SCUBA DIVERS attending the Shoals Marine Laboratory on Appledore Island, Maine. Please follow all instructions VERY CAREFULLY!

APPENDIX 1: SCUBA DIVING MEDICAL EXAM OVERVIEW FOR THE EXAMINING PHYSICIAN

This person, _____, requires a medical examination to assess his/her fitness for certification as a Scientific Diver for the Shoals Marine Laboratory. His /her answers on the Diving Medical History Form (attached), may indicate potential health or safety risks as noted. Your evaluation is requested on the attached scuba Diving Fitness Medical Evaluation Report. If you have questions about diving medicine, you may wish to consult one of the references on the attached list or consult a physician with expertise in diving medicine. Please contact me if you have any questions or concerns about diving medicine or the Shoals Marine Laboratory standards. Thank you for your assistance,
Becca Toppin, Diving Safety Officer, Shoals Marine Laboratory, (508) 454-3571

SCUBA and other modes of compressed-gas diving can be strenuous and hazardous. A special risk is present if the middle ear, sinuses, or lung segments do not readily equalize air pressure changes. The most common cause of distress is eustachian insufficiency. Most fatalities involve deficiencies in prudence, judgment, emotional stability, or physical fitness. Please consult the following list of conditions that usually restrict candidates from diving.

(Adapted from Bove, 1998: bracketed numbers are pages in Bove)

CONDITIONS WHICH MAY DISQUALIFY CANDIDATES FROM DIVING

1. Abnormalities of the tympanic membrane, such as perforation, presence of a monomeric membrane, or inability to autoinflate the middle ears. [5 ,7, 8, 9]
2. Vertigo including Meniere's Disease. [13]
3. Stapedectomy or middle ear reconstructive surgery. [11]
4. Recent ocular surgery. [15, 18, 19]
5. Psychiatric disorders including claustrophobia, suicidal ideation, psychosis, anxiety states, untreated depression. [20 - 23]
6. Substance abuse, including alcohol. [24 - 25]
7. Episodic loss of consciousness. [1, 26, 27]
8. History of seizure. [27, 28]
9. History of stroke or a fixed neurological deficit. [29, 30]
10. Recurring neurologic disorders, including transient ischemic attacks. [29, 30]
11. History of intracranial aneurysm, other vascular malformation or intracranial hemorrhage. [31]
12. History of neurological decompression illness with residual deficit. [29, 30]
13. Head injury with sequelae. [26, 27]
14. Hematologic disorders including coagulopathies. [41, 42]
15. Evidence of coronary artery disease or high risk for coronary artery disease¹. [33 - 35]
16. Atrial septal defects. [39]
17. Significant valvular heart disease - isolated mitral valve prolapse is not disqualifying. [38]
18. Significant cardiac rhythm or conduction abnormalities. [36 - 37]
19. Implanted cardiac pacemakers and cardiac defibrillators (ICD). [39, 40]
20. Inadequate exercise tolerance. [34]
21. Severe hypertension. [35]
22. History of spontaneous or traumatic pneumothorax. [45]
23. Asthma². [42 - 44]
24. Chronic pulmonary disease, including radiographic evidence of pulmonary blebs, bullae, or cysts. [45,46]
25. Diabetes mellitus. [46 - 47]
26. Pregnancy. [56]

³ "Assessment of Cardiovascular Risk by Use of Multiple-Risk-Factor Assessment Equations." Grundy et. al. 1999.AHA/ACC Scientific Statement. <http://www.acc.org/clinical/consensus/risk/risk1999.pdf>

¹ "Assessment of Cardiovascular Risk by Use of Multiple-Risk-Factor Assessment Equations." Grundy et. al. 1999. AHA/ACC Scientific Statement. <http://www.acc.org/clinical/consensus/risk/risk1999.pdf>

² "Are Asthmatics Fit to Dive?" Elliott DH, ed. 1996 Undersea and Hyperbaric Medical Society, Kensington, MD.

SELECTED REFERENCES IN DIVING MEDICINE

Most of these are available from Best Publishing Company, P.O. Box 30100, Flagstaff, AZ 86003-0100, the Divers Alert Network (DAN) or the Undersea and Hyperbaric Medical Association (UHMS), Bethesda, MD.

- ACC/AHA Guidelines for Exercise Testing. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee on Exercise Testing). Gibbons RJ, et al. 1997. Journal of the American College of Cardiology. 30:260-311. <http://www.acc.org/clinical/guidelines/exercise/exercise.pdf>
- Alert Diver Magazine; Articles on diving medicine
<http://www.diversalertnetwork.org/medical/articles/index.asp>
- "Are Asthmatics Fit to Dive?" Elliott DH, ed. 1996 Undersea and Hyperbaric Medical Society, Kensington, MD.
- "Assessment of Cardiovascular Risk by Use of Multiple-Risk-Factor Assessment Equations." Grundy et. al. 1999. AHA/ACC Scientific Statement. <http://www.acc.org/clinical/consensus/risk/risk1999.pdf>
- DIVING MEDICINE, Third Edition, 1997. A. Bove and J. Davis. W.B. Saunders Company, Philadelphia
- DIVING AND SUBAQUATIC MEDICINE, Third Edition, 1994. C. Edmonds, C. Lowery and J. Pennefather. Butterworth-Heinemann Ltd. Oxford
- MEDICAL EXAMINATION OF SPORT SCUBA DIVERS, 1998. Alfred Bove, M.D., Ph.D. (ed.). Medical Seminars, Inc. San Antonio, TX
- NOAA DIVING MANUAL, NOAA. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.
- U.S. NAVY DIVING MANUAL. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.

APPENDIX 2: MEDICAL EVALUATION OF FITNESS FOR SCUBA DIVING, FOR THE EXAMINING PHYSICIAN

Name of Applicant / Diver (Please PRINT)

Date

This person is an applicant for training or is presently certified to engage in diving with self-contained underwater breathing apparatus (scuba). This is an activity that puts unusual stress on the individual in several ways. Your opinion on the applicant's medical fitness is requested. Scuba diving requires heavy exertion. The diver must be free of cardiovascular and respiratory disease. An absolute requirement is the ability of the lungs, middle ear and sinuses to equalize pressure. Any condition that risks the loss of consciousness should disqualify the applicant.

TESTS: Please initial that the following tests were completed.

[] Initial Examination

- _____ Medical History
- _____ Complete Physical Exam with emphasis on neurological and otological components
- _____ Chest X-Ray
- _____ Spirometry
- _____ Hematocrit or Hemoglobin
- _____ Urinalysis
- _____ Any further tests deemed necessary by the physician

Additional testing for first over age 40

- _____ Resting EKG
- _____ Assessment of coronary artery disease using Multiple-Risk-Factor Assessment³
(age, lipid profile, blood pressure, diabetic screening, smoker)
Note: Exercise stress testing may be indicated based on risk factor assessment⁴

[] Re-examination

**(Every 5 years under age 40,
first exam over age 40,
every 3 years over age 40,
every 2 years over age 60)**

- _____ Medical History
- _____ Complete Physical Exam, with emphasis on neurological and otological components
- _____ Hematocrit or Hemoglobin
- _____ Urinalysis
- _____ Any further tests deemed necessary by the physician

Additional testing for over age 40

- _____ Resting EKG
- _____ Assessment of coronary artery disease using Multiple-Risk-Factor Assessment⁵
(age, lipid profile, blood pressure, diabetic screening, smoker)
Note: Exercise stress testing may be indicated based on risk factor assessment⁶

RECOMMENDATION:

- [] APPROVAL. I find no medical condition(s) that I consider incompatible with diving.
- [] RESTRICTED ACTIVITY APPROVAL. The applicant may dive in certain circumstances as described in REMARKS.
- [] FURTHER TESTING REQUIRED. I have encountered a potential contraindication to diving. Additional medical tests must be performed before a final assessment can be made. See REMARKS.
- [] REJECT. This applicant has medical condition(s), which, in my opinion, clearly would constitute unacceptable hazards to health and safety in diving

³ "Assessment of Cardiovascular Risk by Use of Multiple-Risk-Factor Assessment Equations." Grundy et. al. 1999. AHA/ACC Scientific Statement. <http://www.acc.org/clinical/consensus/risk/risk1999.pdf>

⁶ Gibbons RJ, et al. ACC/AHA Guidelines for Exercise Testing. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee on Exercise Testing). Journal of the American College of Cardiology. 30:260-311, 1997. <http://www.acc.org/clinical/guidelines/exercise/exercise.pdf>

REMARKS:

PHYSICIAN'S STATEMENT:

I have evaluated the above-mentioned individual according to the American Academy of Underwater Sciences medical standards for scientific diving (Section 6.00), and find no conditions that may be disqualifying. I have discussed with the patient any medical condition(s) that would not disqualify him/her from diving but which may seriously compromise subsequent health. The patient understands the nature of the hazards and the risks involved in diving with these conditions.

_____ M.D./D.O.
Date Signature

Physician's Name (Please PRINT)

Address

Telephone Number

My familiarity with applicant is:

- ____ With this exam only
- ____ Regular Physician for ____ years
- ____ Other (describe) _____

My familiarity with diving medicine is:

APPLICANT'S RELEASE OF MEDICAL INFORMATION FORM

I authorize the release of this information and all medical information subsequently acquired in association with my diving to the Shoals Marine Laboratory's Diving Safety Officer and Diving Control Board or their designee at (place) _____ on (date) _____.

Applicant / Diver Signature _____ Date _____

APPENDIX 3: SCUBA DIVING MEDICAL HISTORY FOR THE APPLICANT / DIVER

Name _____ Sex ____ Age ____ Wt. ____ Ht. ____

Reason for Diving _____ Date ____/____/____

Name of Applicant / Diver (Please PRINT)

TO THE APPLICANT / DIVER:

SCUBA diving makes considerable demands on you, both physically and mentally. Diving with certain medical conditions may be asking for trouble not only for yourself, but also to anyone coming to your aid if you get into difficulty in the water. Therefore, it is prudent to meet certain medical and physical requirements before beginning a diving or training program.

Your answers to the questions are as important in determining your fitness as your physical examination. Obviously, you should give accurate information or the medical screening procedure becomes useless.

This form shall be kept confidential. If you believe any question amounts to invasion of your privacy, you may elect to omit an answer, provided that you shall subsequently discuss that matter with your own physician and s/he must then indicate, in writing, that you have done so and that no health hazard exists.

Should your answers indicate a condition that might make diving hazardous, you will be asked to review the matter with your physician. In such instances, his/her written authorization will be required in order for further consideration to be given to your application. If your physician concludes that diving would involve undue risk for you, remember that s/he is concerned only with your well-being and safety. Please respect the advice and the intent of this medical history form.

Have you ever had or do you presently have any of the following?	Yes	No	Comments
1. Trouble with your ears, including ruptured eardrum, difficulty clearing your ears, or surgery.			
2. Trouble with dizziness.			
3. Eye surgery.			
4. Depression, anxiety, claustrophobia, etc.			
5. Substance abuse, including alcohol.			
6. Loss of consciousness.			
7. Epilepsy or other seizures, convulsions or fits.			
8. Stroke or a fixed neurological deficit.			
9. Recurring neurologic disorders, including transient ischemic attacks.			
10. Aneurysms or bleeding in the brain.			
11. Decompression sickness or embolism.			
12. Head injury			
13. Disorders of the blood, or easy bleeding.			
14. Heart disease, diabetes, high cholesterol			
15. Anatomical heart abnormalities including patent foramen ovale, valve problems, etc.			
16. Heart rhythm problems.			
17. Need for a pacemaker			
18. Difficulty with exercise.			
19. High blood pressure			
20. Collapsed lung			
21. Asthma.			
22. Other lung disease.			
23. Diabetes mellitus.			
24. Pregnancy			
25 Surgery If yes explain below			
26. Hospitalizations. If yes explain below			
27. Do you take any medications? If yes list below			
28. Do you have any allergies to medications, foods, environmental? If			

yes explain below			
29. Do you smoke?			
30. Do you drink alcoholic beverages?			
31. Is there a family history of high cholesterol?			
32. Is there a family history of heart disease or stroke?			
33. Is there a family history of diabetes?			
34. Is there a family history of asthma?			

Please explain any "yes" answers to the above questions.

I certify that the above answers and information represent an accurate and complete description of my medical history.

Applicant / Diver Signature

Date

APPENDIX 13: SCUBA DIVING APPLICATION FORM FOR THE APPLICANT / DIVER

APPLICANT / DIVER NAME: _____
(Please PRINT)

SML COURSES OR RESEARCH PROGRAMS IN WHICH YOU ARE PARTICIPATING:

PLEASE READ:

All students, staff, volunteers, faculty and visiting researchers planning to SCUBA dive at the Shoals Marine Laboratory are required to complete this form. In addition, **at least one month prior to your arrival on Appledore**, SML must receive:
(1) **SML Diving Medical Evaluation** and **Medical History** forms from a medical evaluation completed within the 12 months prior to your arrival at SML.
(2) Signed and witnessed **Release/Indemnification of all Claims and Covenant Not to Sue** form.
(3) Documentation that your diving equipment has been maintained and tested as required by the **SCUBA Equipment List**.

All divers must supply their own SCUBA equipment except weights and tanks: see separate **SCUBA Equipment List!**

All divers must complete and pass an open-water check-out dive with the SML Diving Safety Officer or designee. [If you have been a SML diver, what was the date (mth, yr) of your check-out dive? _____]

PLEASE COMPLETE:

(1) **DIVER TRAINING:** Level of certification, name of certifying organization, date and location. List this information in this space AND attach a photocopy of your dive certificate or card.

(2) **EXPERIENCE:** Please give a summary of your diving experience during the past twelve months. Include location, depth and purpose of dive. (If you are currently a certified scientific diver with any agency such as AAUS, NOAA, WHOI, or UNH, do not complete this or the following section. Instead, document certification and experience by submitting the appropriate reciprocity forms.)

(3) **ADDITIONAL TRAINING and INFORMATION NEEDED FROM DIVER:** Have you taken any CPR, first aid, emergency oxygen, or life-saving courses? If yes, list names and dates AND provide a photocopy of your CERTIFICATION CARD(s). If you have a DIVE COMPUTER that you will be using, please indicate make and model below (see SML manual, appendix 8). Please also provide the make and model of your REGULATOR:

(4) **INSURANCE:** To participate in the SML diving program, you must have health insurance that provides diving-accident coverage. Check your personal health and accident insurance to see if you have coverage for diving accidents, pay specific attention to any "exception clauses". D.A.N. (Diver Alert Network) provides affordable and easily obtained insurance for dive accidents and medical emergencies. For more information, call 1 800 446-2671.

NOTE: Shoals Marine Laboratory employees engaged in working dives, instruction and/or supervision of student divers are additionally covered by Worker's Compensation Insurance. Check with the SML Cornell Office if you are unsure of your status.

_____ I have coverage in case of a diving accident.

Company: _____

Policy No: _____

_____ I do not have coverage at this time but will provide the company name and policy number(s) to the Cornell Office (607) 255-3717, to complete my requirements before arriving on Appledore. I understand that I will not be able to dive until this information is provided.

(5) **MEDICAL:** You and your physician must complete the SML Diving Medical Forms. Your physical must be current (within twelve months before your arrival at the Lab). These forms must be submitted to the Cornell Office at least 1 month before your arrival on island. ***Please make a copy of the completed forms for yourself and bring them with you to Appledore.*** Return the completed original forms to: **Shoals Marine Laboratory, G-14 Stimson Hall, Cornell University, Ithaca, New York 14853.**

(6) **DIVER RESPONSIBILITIES AND CERTIFICATIONS:** *Please initial each item to verify you have read and understood it.*

I understand that the basic responsibility, while diving, rests with the individual, and that in requesting SCUBA diving privileges at the Shoals Marine Laboratory, I will be responsible for and insure that:

____(1) I am in good physical condition and physically prepared for the rigorous diving conditions at the Isles of Shoals.

____(2) I am at the level of diving proficiency required for basic certification and am certified by a nationally recognized diver training organization.

____(3) My equipment is in safe operating condition and maintained according to the requirements of the *Shoals Marine Laboratory Scientific Diving Standards*.

____(4) I do not violate the dictates of my diver training.

Additionally, I certify that:

____(5) I have read, understood, and agree to follow the *Shoals Marine Laboratory Scientific Diving Standards*.

____(6) I understand that all SCUBA diving at the Shoals Marine Laboratory is voluntary.

____(7) I have sufficient health and accident insurance coverage for any injury incurred while diving.

____(8) To the best of my knowledge, the information in this Diver Application is correct.

Applicant / Diver Signature

Date

Witness Name (print or type)

Witness Signature

APPENDIX 15: RELEASE / INDEMNIFICATION OF ALL CLAIMS AND COVENANT NOT TO SUE

NOTICE: This is a legally binding agreement. By signing this agreement you give up your right to bring a court action to recover compensation or obtain any other remedy for any injury to yourself, your property, or your death, however caused arising out of your participation in your course at Shoals Marine Laboratory.

INITIAL EACH ITEM TO VERIFY YOU HAVE READ AND UNDERSTOOD IT

ACKNOWLEDGMENT OF RISK

_____ I hereby acknowledge and agree that the sport of SCUBA diving has inherent risks. I have full knowledge of the nature and the extent of all the risks associated with SCUBA diving, including but not limited to:

- (1) Drowning
- (2) Decompression illness - including DCS and lung over-pressure syndromes
- (3) Marine animal attacks
- (4) Failure of equipment
- (5) Bad air
- (6) Injuries resulting from contact with underwater objects and/or the sea bottom
- (7) Temperature extremes
- (8) Boats, boat motors and propellers, docks, wharves, and diving platforms
- (9) Hyperbaric treatment may not be readily available

_____ I further acknowledge that the above list is not inclusive of all possible risks associated with the sport of SCUBA in and around the Isles of Shoals and that the above list in no way limits the extent or reach of this release and covenant not to sue.

RELEASE / INDEMNIFICATION

_____ In consideration of my enrollment in a Shoals Marine Laboratory course or courses, I, the undersigned diver, hereby do agree on behalf of myself, heirs, representatives, executors, administrators and assigns, to release University of New Hampshire, Cornell University and the Shoals Marine Laboratory, their officers, agents, and employees (herein collectively referred to as the Universities) from any cause of action, claims, demands of any nature whatsoever, including but not limited to a claim of negligence, which I, my heirs, representatives, executors, administrators and assigns may now have, or have in the future against the Universities on account of personal injury, property damage, death or accident of any kind, arising out of or in any way related to my participation in my Shoals Marine Laboratory course, whether that participation is supervised or unsupervised, howsoever the injury or damage is caused, including but not limited to the negligence of the Universities.

(continued on next page)

_____ In consideration of my enrollment, I, the undersigned participant, agree to indemnify and Hold Harmless, University of New Hampshire, Cornell University, its officers, agents, and employees from any and all causes of action demands, losses, costs of any nature whatsoever arising out of or in any way relating to my participation in a Shoals Marine Laboratory course.

_____ I hereby certify that I have full knowledge of the nature and the extent of the risks inherent in diving at the Lab, and that I am voluntarily assuming the risks. I understand that I will be solely responsible for any loss or damage (including death) that I sustain while participating in my course or courses and that by this agreement I am relieving the Universities of any and all liability for such loss, damage or death.

_____ I further certify that I am in good health and that I have no physical limitations, which would preclude my safe participation. I further certify that I hold a valid SCUBA certification, and that my equipment is in safe operating condition.

_____ I further certify that my date of birth is _____ (month/day/year) and that my present age is _____, and that I am therefore of lawful age (18 years or older) and otherwise legally competent to sign this agreement. I further understand that the terms of this agreement are legally binding and I certify that I am carefully signing this agreement, after carefully reading the same, of my own free will.

WITNESS WHEREOF, this instrument is duly executed at: _____

this _____ day of _____, 20____.

Applicant / Diver Signature

Applicant / Diver Printed Clearly

Witness Signature

Witness Name Printed Clearly

(All appendices are from the Shoals Marine Laboratory Handbook for Diving Safety).