

# Diving Medical Exam Overview for the Examining Physician

## APPENDIX 1

### **TO THE EXAMINING PHYSICIAN,**

This person, requires a medical examination to assess their fitness for certification as a Scientific Diver for Boston University. Their 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 contact one of the physicians with expertise in diving medicine whose names and phone numbers appear on an attached list, the Undersea Hyperbaric and Medical Society, or the Divers Alert Network. Please contact the undersigned Diving Safety Officer if you have any questions or concerns about diving medicine or Boston University's standards. Thank you for your assistance.

Diving Safety Officer  
divesafe@bu.edu

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. Recent deaths in the scientific diving community have been attributed to cardiovascular disease. 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 disease. [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. Asthma. [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]

### SELECTED REFERENCES IN DIVING MEDICINE

Available from Best Publishing Company, P.O. Box 30100, Flagstaff, AZ 86003-0100, the Divers Alert Network (DAN) or the Undersea and Hyperbaric Medical Society (UHMS), Durham, NC

- Elliott, D.H. ed. 1996. Are Asthmatics Fit to Dive? Kensington, MD: Undersea and Hyperbaric Medical Society.
- Bove, A.A. 2011. The cardiovascular system and diving risk. Undersea and Hyperbaric Medicine 38(4): 261-269.
- Thompson, P.D. 2011. The cardiovascular risks of diving. Undersea and Hyperbaric Medicine 38(4): 271-277.
- Douglas, P.S. 2011. Cardiovascular screening in asymptomatic adults: Lessons for the diving world. Undersea and Hyperbaric Medicine 38(4): 279-287.
- Mitchell, S.J., and A.A. Bove. 2011. Medical screening of recreational divers for cardiovascular disease: Consensus discussion at the Divers Alert Network Fatality Workshop. Undersea and Hyperbaric Medicine 38(4): 289-296.

- Grundy, S.M., Pasternak, R., Greenland, P., Smith, S., and Fuster, V. 1999. Assessment of Cardiovascular Risk by Use of Multiple-Risk-Factor Assessment Equations. AHA/ACC Scientific Statement. Journal of the American College of Cardiology, 34: 1348-1359. <http://content.onlinejacc.org/cgi/content/short/34/4/1348>
- Bove, A.A. and Davis, J. 2003. DIVING MEDICINE, Fourth Edition. Philadelphia: W.B. Saunders Company.
- Edmonds, C., Lowry, C., Pennefather, J. and Walker, R. 2002. DIVING AND SUBAQUATIC MEDICINE, Fourth Edition. London: Hodder Arnold Publishers.
- Bove, A.A. ed. 1998. MEDICAL EXAMINATION OF SPORT SCUBA DIVERS, San Antonio, TX: Medical Seminars, Inc.
- NOAA DIVING MANUAL, NOAA. Superintendent of Documents. Washington, DC: U.S. Government Printing Office.
- U.S. NAVY DIVING MANUAL. Superintendent of Documents, Washington, DC: U.S. Government Printing Office, Washington, D.C.

# Medical Evaluation of Fitness for Scuba Diving Report

## APPENDIX 2

**Name of Applicant****Date of Medical Evaluation (Month/Day/Year)****TO THE EXAMINING PHYSICIAN**

This person is an applicant for training or is presently certified to engage in diving with self-contained underwater breathing apparatus (SCUBA). Scientific divers require periodic SCUBA diving medical examinations to assess their fitness to engage in diving with SCUBA. Your opinion on the applicant's medical fitness is requested. Their answers on the Diving Medical History Form may indicate potential health or safety risks as noted. SCUBA diving is an activity that puts unusual stress on the individual in several ways. SCUBA diving requires heavy exertion. The diver must be free of cardiovascular and respiratory disease (see references, following page). An absolute requirement is the ability of the lungs, middle ears and sinuses to equalize pressure. Any condition that risks the loss of consciousness should disqualify the applicant. If you have questions about diving medicine, please consult with the Undersea Hyperbaric Medical Society or Divers Alert Network.

**REQUIRED TESTS****DURING ALL INITIAL AND PERIODIC RE-EXAMS (UNDER AGE 40)**

- Medical history
- Complete physical exam, with emphasis on neurological and otological components
- Urinalysis
- Any further tests deemed necessary by the physician

**ADDITIONAL TESTS DURING FIRST EXAM OVER AGE 40 AND PERIODIC RE-EXAMS (OVER AGE 40)**

- Chest x-ray (Required only during first exam over age 40)
- Resting EKG
- Assessment of coronary artery disease using Multiple-Risk-Factor Assessment<sup>1</sup> (age, lipid profile, blood pressure, diabetic screening, smoking)

Note: Exercise stress testing may be indicated based on Multiple-Risk-Factor Assessment<sup>2</sup>

**PYHICIAN'S STATEMENT**

Diver is medically qualified to dive for:	2 years (over age 60)	3 years (age 40-59)	5 years (under age 40)
Diver is not medically qualified to dive:	Permanently	Temporarily	

I have evaluated the abovementioned individual according to Boston University medical standards and required tests for scientific diving as described in Appendix 1 and, in my opinion, find no medical conditions that may be disqualifying for participation in SCUBA diving. 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.

**MD or DO Signature****Date****Physician Name****Phone Number****Email Address****Address****City****State**

My familiarity with applicant is:      This exam only      Regular physician for      years

My familiarity with diving medicine is:

# Diving Medical History Form

APPENDIX 3

To Be Completed By Applicant-Diver

Name	Sex	Age	Weight	Height
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Sponsor (Department / Project / Program / School / etc.)

Date (Month / Day / Year)

**TO THE APPLICANT**

SCUBA diving and snorkeling places considerable physical and mental demands on the diver. Certain medical and physical requirements must be met before beginning a diving or training program. Your accurate answers to the questions are more important, in many instances, in determining your fitness to dive than what the physician may see, hear or feel as part of the diving medical certification procedure.

This form shall be kept confidential by the examining physician. 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 who must then indicate, in writing, that you have done so and that no health hazard exists.

Should your answers indicate a condition, which might make diving hazardous, you will be asked to review the matter with your physician. In such instances, their 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 they are concerned only with your well-being and safety.

YES	NO	Please indicate whether or not the following apply to you	Comments
		Convulsions, seizures, or epilepsy	
		Fainting spells or dizziness	
		Been addicted to drugs	
		Diabetes	
		Motion sickness or sea/air sickness	
		Claustrophobia	
		Mental disorder or nervous breakdown	
		Are you pregnant?	
		Do you suffer from menstrual problems?	
		Anxiety spells or hyperventilation	
		Frequent sour stomachs, nervous stomachs or vomiting spells	
		Had a major operation	
		Presently being treated by a physician	
		Taking any medication regularly (even non-prescription)	
		Been rejected or restricted from sports	
		Headaches (frequent and severe)	
		Wear dental plates	
		Wear glasses or contact lenses	
		Bleeding disorders	
		Alcoholism	
		Any problems related to diving	
		Nervous tension or emotional problems	
		Take tranquilizers	
		Perforated ear drums	

YES	NO	Please indicate whether or not the following apply to you	Comments
		Hay fever	
		Frequent sinus trouble, frequent drainage from the nose, post-nasal drip, or stuffy nose	
		Frequent earaches	
		Drainage from the ears	
		Difficulty with your ears in airplanes or on mountains	
		Ear surgery	
		Ringing in your ears	
		Frequent dizzy spells	
		Hearing problems	
		Trouble equalizing pressure in your ears	
		Asthma	
		Wheezing attacks	
		Cough (chronic or recurrent)	
		Frequently raise sputum	
		Pleurisy	
		Collapsed lung (pneumothorax)	
		Lung cysts	
		Pneumonia	
		Tuberculosis	
		Shortness of breath	
		Lung problem or abnormality	
		Spit blood	
		Breathing difficulty after eating particular foods, after exposure to particular pollens or animals	
		Are you subject to bronchitis?	
		Subcutaneous emphysema (air under the skin)	
		Air embolism after diving	
		Decompression sickness (DCS)	
		Rheumatic fever	
		Scarlet fever	
		Heart murmur	
		Large heart	
		High blood pressure	
		Angina (heart pains or pressure in the chest)	
		Heart attack	
		Low blood pressure	
		Recurrent or persistent swelling of the legs	
		Pounding, rapid heartbeat or palpitations	
		Easily fatigued or short of breath	
		Abnormal EKG	
		Joint problems, dislocations or arthritis	

YES	NO	Please indicate whether or not the following apply to you	Comments
		Back trouble or back injuries	
		Ruptured or slipped disk	
		Limiting physical handicaps	
		Muscle cramps	
		Varicose veins	
		Amputations	
		Head injury causing unconsciousness	
		Paralysis	
		Have you ever had an adverse reaction to medication?	
		Do you smoke?	
		Have you ever had any other medical problems not listed? If so, please list or describe below:	
		Is there a family history of high cholesterol?	
		Is there a family history of heart disease or stroke?	
		Is there a family history of diabetes?	
		Is there a family history of asthma?	
		Date of last tetanus shot?	
		Vaccination dates?	

**EXPLAIN ANY YES ANSWERS ABOVE**

**CERTIFICATION**

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

Diver Signature

Date

# Recommended Physicians with Expertise in Diving Medicine

## APPENDIX 4

Please list local Medical Doctors that have training and expertise in diving or undersea medicine. Level I graduates of the Undersea Hyperbaric and Medical Society (UHMS) Fitness to Dive courses (approximately 250 physicians) are listed on the UHMS website available [here](#).

### PHYSICIAN 1

Name	Phone Number
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Address	City	State
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### PHYSICIAN 2

Name	Phone Number
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Address	City	State
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### PHYSICIAN 3

Name	Phone Number
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Address	City	State
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### PHYSICIAN 4

Name	Phone Number
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Address	City	State
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### PHYSICIAN 5

Name	Phone Number
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Address	City	State
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### PHYSICIAN 6

Name	Phone Number
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Address	City	State
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