

# UMB DIVING

## MEDICAL EXAM OVERVIEW FOR THE EXAMINING PHYSICIAN

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### TO THE EXAMINING PHYSICIAN:

This person, \_\_\_\_\_, requires a medical examination to assess their fitness for certification as a Scientific Diver for The University of Massachusetts Boston. Their answers on the UMB Diving Medical History Form (*to be provided by applicant*) 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 below or contact one of the physicians with expertise in diving medicine whose names and phone numbers can be found through the Undersea Hyperbaric and Medical Society, or the Divers Alert Network. Please contact the UMB Diving Safety Officer at dso@umb.edu if you have any questions or concerns about diving medicine or The University of Massachusetts Boston's standards. Thank you for your assistance.

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 auto inflate 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.
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- 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
- NOAA Diving Manual, NOAA. Superintendent of Documents. Washington, DC: U.S. Government Printing Office, Washington, D.C.
- U.S. NAVY Diving Manual. Superintendent of Documents, Washington, DC: U.S. Government Printing Office, Washington, D.C.

### RECOMMENDED PHYSICIANS WITH EXPERTISE IN DIVING MEDICINE

**Divers Alert Network (DAN)** <http://www.diversalertnetwork.org> - can provide assistance  
Non-Emergency Questions: 800-446-2671 or 919-684-2948, M-F, 8:30am-5:00pm (EST)

**Undersea Hyperbaric and Medical Society (UHMS)**  
<https://www.uhms.org/education/credentialing/diving-medical-examiners.html>



APPENDIX 1

# DIVING MEDICAL EXAM OVERVIEW FOR THE EXAMINING PHYSICIAN

**TO THE EXAMINING PHYSICIAN:**

This person, \_\_\_\_\_, requires a medical examination to assess their fitness for certification as a Scientific Diver for The University of Massachusetts Boston. Their answers on the Diving Medical History Form (provided by applicant) 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 below or contact one of the physicians with expertise in diving medicine whose names and phone numbers can be found through 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 The University of Massachusetts Boston’s standards. Thank you for your assistance.

\_\_\_\_\_  
Diving Safety Officer

\_\_\_\_\_  
Date

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)

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2. Bove, A.A. 2011. The cardiovascular system and diving risk. *Undersea and Hyperbaric Medicine* 38(4): 261-269.
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6. 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>
7. Bove, A.A. and Davis, J. 2003. *DIVING MEDICINE*, Fourth Edition. Philadelphia: W.B. Saunders Company.
8. Edmonds, C., Lowry, C., Pennefather, J. and Walker, R. 2002. *DIVING AND SUBAQUATIC MEDICINE*, Fourth Edition. London: Hodder Arnold Publishers.
9. Bove, A.A. ed. 1998. *MEDICAL EXAMINATION OF SPORT SCUBA DIVERS*, San Antonio, TX: Medical Seminars, Inc.
10. NOAA *DIVING MANUAL*, NOAA. Superintendent of Documents. Washington, DC: U.S. Government Printing Office.
11. U.S. NAVY *DIVING MANUAL*. Superintendent of Documents, Washington, DC: U.S. Government Printing Office, Washington, D.C.

#### *RECOMMENDED PHYSICIANS WITH EXPERTISE IN DIVING MEDICINE*

Divers Alert Network (DAN) <http://www.diversalertnetwork.org> - can provide assistance



**UNIVERSITY OF MASSACHUSETTS BOSTON**  
**Science Diving Program**

100 Morrissey Boulevard  
Boston, MA 02125-3393  
P: 617.287.5000  
[www.umb.edu](http://www.umb.edu)

Non-Emergency Questions: 800-446-2671 or 919-684-2948, M-F, 8:30am-5:00pm (EST)



APPENDIX 2

# MEDICAL EVALUATION OF FITNESS FOR SCUBA DIVING REPORT

*(To Be Completed By Examining Physician)*

\_\_\_\_\_  
Name of Applicant

\_\_\_\_\_  
Date of Exam

**To The Examining Physician:** Scientific divers require periodic scuba diving medical examinations to assess their fitness to engage in diving with self-contained underwater breathing apparatus (SCUBA). Your evaluation and opinion on the applicant's medical fitness is requested on this form. Scuba diving is an activity that puts unusual stress on the individual in several ways. The applicants answers provided on their Diving Medical History Form may indicate potential health or safety risks as noted.

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. Please proceed in accordance with the AAUS Medical Standards (Sec. 6.00). If you have questions about diving medicine, please consult with the Undersea Hyperbaric Medical Society or Divers Alert Network.

THE FOLLOWING TESTS ARE REQUIRED DURING ALL INITIAL AND PERIODIC RE-EXAMS:

- 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>

Note: Re-Examination occurs:

1. Every 5 years under age 40
2. Every 3 years over age 40
3. Every 2 years over age 60
- 4.

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. 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>



PHYSICIAN'S STATEMENT:

\_\_\_\_\_ 01 Diver **IS** medically qualified to dive for: \_\_\_\_\_ 2 years (over age 60)  
\_\_\_\_\_ 3 years (age 40-59)  
\_\_\_\_\_ 5 years (under age 40)

\_\_\_\_\_ 02 Diver **IS NOT** medically qualified to dive: \_\_\_\_\_ Permanently \_\_\_\_\_ Temporarily.

PHYSICIAN'S REMARKS

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I have evaluated the abovementioned individual according to the American Academy of Underwater Sciences medical standards and required tests for scientific diving (Sec. 6.00 and 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**

\_\_\_\_\_  
Name (Print or Type)

\_\_\_\_\_  
Address

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_  
E-Mail Address

My familiarity with applicant is: \_\_\_\_\_ This exam only

\_\_\_\_\_ Regular physician for \_\_\_\_\_ years

My familiarity with diving medicine is: \_\_\_\_\_



APPENDIX 2b

# MEDICAL EVALUATION OF FITNESS FOR SCUBA DIVING REPORT

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## APPLICANT'S RELEASE OF MEDICAL INFORMATION FORM

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Name of Applicant (Print or Type)

I authorize the release of this information and all medical information subsequently acquired in association with my diving to The University of Massachusetts Boston's Diving Safety Officer and Diving Control Board or their designee at The University of Massachusetts Boston, 100 Morrissey Blvd, Boston, MA 02125

Signature of Applicant \_\_\_\_\_

Date \_\_\_\_\_

### REFERENCES

<sup>1</sup> 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>



APPENDIX 3

# DIVING MEDICAL HISTORY FORM

*(To Be Completed By Applicant-Diver)*

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Birthdate: \_\_\_\_\_ Sex: \_\_\_\_\_ Wt: \_\_\_\_\_ Ht: \_\_\_\_\_

Sponsor \_\_\_\_\_  
*(Dept./Project/Program/School, etc.)*

## TO THE APPLICANT:

Scuba diving 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.

The examining physician shall keep this form 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 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.

Please indicate whether or not the following apply to you

Yes No Comments

|   |                                    | Yes | No | Comments |
|---|------------------------------------|-----|----|----------|
| 1 | Convulsions, seizures, or epilepsy |     |    |          |
| 2 | Fainting spells or dizziness       |     |    |          |
| 3 | Been addicted to drugs             |     |    |          |
| 4 | Diabetes                           |     |    |          |



|    |   |     |    |          |
|----|---|-----|----|----------|
| 5  | Motion sickness or sea/air sickness                         |     |    |          |
| 6  | Claustrophobia  |     |    |          |
| 7  | Mental disorder or nervous breakdown                        |     |    |          |
| 8  | Are you pregnant?   |     |    |          |
| 9  | Do you suffer from menstrual problems?                      |     |    |          |
| 10 | Anxiety spells or hyperventilation                          |     |    |          |
| 11 | Frequent sour stomachs, nervous stomachs or vomiting spells |     |    |          |
| 12 | Had a major operation                                       |     |    |          |
| 13 | Presently being treated by a physician                      |     |    |          |
| 14 | Taking any medication regularly (even non-prescription)     |     |    |          |
| 15 | Been rejected or restricted from sports                     |     |    |          |
| 16 | Headaches (frequent and severe)                             |     |    |          |
| 17 | Wear dental plates  |     |    |          |
| 18 | Wear glasses or contact lenses                              |     |    |          |
| 19 | Bleeding disorders  |     |    |          |
| 20 | Alcoholism  |     |    |          |
| 21 | Any problems related to diving                              |     |    |          |
| 22 | Nervous tension or emotional problems                       |     |    |          |
|    | Please indicate whether or not the following apply to you   | Yes | No | Comments |
| 23 | Take tranquilizers  |     |    |          |
| 24 | Perforated ear drums  |     |    |          |
| 25 | Hay fever   |     |    |          |



|    |   |  |  |  |
|----|---|--|--|--|
| 26 | Frequent sinus trouble, frequent drainage from the nose, post-nasal drip, or stuffy nose            |  |  |  |
| 27 | Frequent earaches   |  |  |  |
| 28 | Drainage from the ears  |  |  |  |
| 29 | Difficulty with your ears in airplanes or on mountains  |  |  |  |
| 30 | Ear surgery   |  |  |  |
| 31 | ringing in your ears  |  |  |  |
| 32 | Frequent dizzy spells   |  |  |  |
| 33 | Hearing problems  |  |  |  |
| 34 | Trouble equalizing pressure in your ears  |  |  |  |
| 35 | Asthma  |  |  |  |
| 36 | Wheezing attacks  |  |  |  |
| 37 | Cough (chronic or recurrent)  |  |  |  |
| 38 | Frequently raise sputum   |  |  |  |
| 39 | Pleurisy  |  |  |  |
| 40 | Collapsed lung (pneumothorax)   |  |  |  |
| 41 | Lung cysts  |  |  |  |
| 42 | Pneumonia   |  |  |  |
| 43 | Tuberculosis  |  |  |  |
| 44 | Shortness of breath   |  |  |  |
| 45 | Lung problem or abnormality   |  |  |  |
| 46 | Spit blood  |  |  |  |
| 47 | Breathing difficulty after eating particular foods, after exposure to particular pollens or animals |  |  |  |



|    |   |  |  |  |
|----|---|--|--|--|
| 48 | Are you subject to bronchitis                 |  |  |  |
| 49 | Subcutaneous emphysema (air under the skin)   |  |  |  |
| 50 | Air embolism after diving                     |  |  |  |
| 51 | Decompression sickness                        |  |  |  |
| 52 | Rheumatic fever                               |  |  |  |
| 53 | Scarlet fever                                 |  |  |  |
| 54 | Heart murmur                                  |  |  |  |
| 55 | Large heart                                   |  |  |  |
| 56 | High blood pressure                           |  |  |  |
| 57 | Angina (heart pains or pressure in the chest) |  |  |  |
| 58 | Heart attack                                  |  |  |  |
| 59 | Low blood pressure                            |  |  |  |
| 60 | Recurrent or persistent swelling of the legs  |  |  |  |
| 61 | Pounding, rapid heartbeat or palpitations     |  |  |  |
| 62 | Easily fatigued or short of breath            |  |  |  |
| 63 | Abnormal EKG                                  |  |  |  |
| 64 | Joint problems, dislocations or arthritis     |  |  |  |
| 65 | Back trouble or back injuries                 |  |  |  |
| 66 | Ruptured or slipped disk                      |  |  |  |
| 67 | Limiting physical handicaps                   |  |  |  |
| 68 | Muscle cramps                                 |  |  |  |
| 69 | Varicose veins                                |  |  |  |



|    |  |  |  |  |
|----|--|--|--|--|
| 70 | Amputations  |  |  |  |
| 71 | Head injury causing unconsciousness  |  |  |  |
| 72 | Paralysis  |  |  |  |
| 73 | Have you ever had an adverse reaction to medication?   |  |  |  |
| 74 | Do you smoke?  |  |  |  |
| 75 | Is there a family history of high cholesterol?   |  |  |  |
|    | Is there a family history of heart disease or stroke?  |  |  |  |
| 76 | Is there a family history of diabetes?   |  |  |  |
| 77 | Is there a family history of asthma?   |  |  |  |
| 78 | Date of last tetanus shot?   |  |  |  |
| 79 | Recent Vaccination dates?  |  |  |  |
| 80 | Have you ever had any other medical problems not listed? If so, please list or describe below; |  |  |  |

Please explain any “yes” answers to the above questions.

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

Signature

Date