



DOWNTOWN AQUARIUM

MEDICAL EVALUATION OF FITNESS FOR SCUBA DIVING

ALL AQDV AND DBSF DIVERS/APPLICANTS MUST:

1. Read over and complete:
 - Appendix 1
 - Bottom of Appendix 2
 - Appendix 3
2. Have their **doctor (MD or DO)** complete: Appendix 2
3. Scan and email **ALL** completed paperwork¹ to the DSO prior to your dive physical expiration date.

Daniel Redinger
Downtown Aquarium Dive Safety Officer
700 Water Street
Denver, Colorado 80211

Phone: (303) 561 – 4557

Email: dredinger@ldry.com

PLEASE NOTE: Acceptance into the diving program is contingent upon a completed diving physical with doctor approval, and a satisfactory checkout dive completed at the Downtown Aquarium Denver by the Dive Safety Officer or an appointed designee. The Downtown Aquarium Denver reserves the right to require further medical review by a specialized doctor, or deny entry into the diving program for any reason.

¹ Make copies of all paperwork for your own records.

APPENDIX 1

DIVING MEDICAL EXAM OVERVIEW FOR THE EXAMINING DOCTOR

TO THE EXAMINING DOCTOR:

_____ requires a medical examination to assess their fitness for certification as a Scientific Diver for The Downtown Aquarium Denver.

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 of a general nature about diving medicine, you may wish to consult one of the doctors with expertise in diving medicine whose names and phone numbers appear on the attached list, or associated with the Undersea Hyperbaric and Medical Society, or the Divers Alert Network. Please contact one of the Dive Safety Officers noted below if you have any questions or concerns regarding The Downtown Aquarium Denver dive program or the diving medical standards. Thank you for your assistance.

Dive Safety Officers:

Todd Hall

(Print Name)

(303) 561 – 4557

(Phone Number)

Daniel Redinger

(Print Name)

(303) 561 – 4557

(Phone Number)

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, judgement, emotional stability, or physical fitness. 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.
- 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.

APPENDIX 2

AAUS MEDICAL EVALUATION OF FITNESS FOR SCUBA DIVING REPORT

 Name of Applicant (Print)

 Date of Medical Evaluation (Month/Day/Year)

TO THE EXAMINING DOCTOR:

Scientific divers require periodic SCUBA diving medical examinations to assess their fitness to engage in diving with self-contained underwater breathing apparatus (SCUBA). 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. Your evaluation is requested on this Medical Evaluation form. 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 (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:

All initial and periodic re-examination tests are to be completed in their entirety. If the exam falls between the initial and periodic re-examinations, the extent of tests and lab requirements are to be at the discretion of the examining doctor and to be at a level equal to that of a basic annual health maintenance physical.

Please initial that the following tests were completed.

Laboratory Requirements for Evaluations and Intervals		Scientific Diving Standards			
	Frequency	Age	< 40	40 – 60	> 60
			5 years	3 years	2 years
Complete Medical History			X	X	X
Complete Physical Exam, emphasis on neurological and otological components			X	X	X
Urinalysis			X	X	X
Any further tests deemed necessary by the doctor			X	X	X
Chest X-Ray (Only required on initial examination, and anytime deemed necessary by doctor.)				X	X
Resting EKG				X	X
Coronary assessment using Multiple-Risk-Factor Assessment ¹ (age, lipid, blood pressure, diabetic screening, smoker) Note: Exercise stress testing may be indicated based on Multiple-Risk-Factor Assessment ²				X	X

¹ Grundy, R. J. et al. 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>

² Bove, A.A. 2011. The cardiovascular system and diving risk. *Undersea and Hyperbaric Medicine*. 38(4): 261 - 269

DOCTOR'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

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.

Signature of Doctor (MD or DO)

Name of Doctor (Print)

Address

Telephone Number

Date (Month/Day/Year)

My familiarity with applicant is: _____ This exam only

_____ Regular doctor 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 Downtown Aquarium Denver's Dive Safety Officer and Diving Control Board, or designee.

Name of Applicant (print)

Signature of Applicant

Date (Month/Day/Year)

APPENDIX 3

DIVING MEDICAL HISTORY FORM

(To Be Completed By Applicant-Diver)

Name _____ Sex _____ Age _____ Wt _____ Ht _____

Sponsor Downtown Aquarium Denver Date _____
 (Facility, Department, etc.) (Month/Day/Year)

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 doctor may see, hear or feel as part of the diving medical certification procedure.

This form shall be kept confidential by the examining doctor. 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 doctor 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 doctor. In such instances, their written authorization will be required in order for further consideration to be given to your application. If your doctor 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
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)	

	Yes	No	Please indicate whether or not the following apply to you	Comments
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	
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	

	Yes	No	Please indicate whether or not the following apply to you	Comments
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?	

	Yes	No	Please indicate whether or not the following apply to you	Comments
75			Have you ever had any other medical problems not listed? If so, please list and describe below.	
76			Is there a family history of high cholesterol?	
77			Is there a family history of heart disease or stroke?	
78			Is there a family history of diabetes?	
79			Is there a family history of asthma?	
80			Date of last tetanus shot? Vaccination dates?	

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.

Name of Applicant (Print)

Signature of Applicant

Date (Month/Day/Year)

APPENDIX 4

RECOMMENDED DOCTORS WITH EXPERTISE IN DIVING MEDICINE

List of 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 doctors) are listed at <http://membership.uhms.org/?page=DivingMedical> (UHMS website, go to Resources, and go to Diving Medical Examiners List).

Diver's Alert Network

Duke University Medical Center

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Durham, North Carolina 27710

(919) 684 – 2948