

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 Pittsburgh Zoo & PPG Aquarium's Volunteer Dive Program.

This packet contains information for yourself and the applicant, which includes:

- I. **Contact information:** Volunteer Dive Program and Diving Medical Officer (p.1)
- II. **Conditions which may disqualify a candidate from diving** (p.2)
- III. **Medical History Form** (p.3) To be completed by the applicant. This may indicate potential health or safety risks as noted.
- IV. **Diving Fitness Medical Evaluation Report** (p.5) To be completed by the examining physician. Please evaluate and state your recommendation as per the applicant's fitness to enter into our volunteer dive program.
- v. **Selected references in diving medicine** (p.7)

Thank you for your assistance,

Sincerely,

Ashley Kidd

I. Contacts

Pittsburgh Zoo & PPG Aquarium volunteer dive program

Name: Ashley Kidd, PADI Scuba Instructor
Position: Volunteer Dive Program Dive Safety Officer & Aquarist
Address: Pittsburgh Zoo & PPG Aquarium
One Wild Place
Pittsburgh, PA 15263
Telephone: 412 365 2618

Local physician with expertise in diving medicine

Name: Dr. Kevin O'toole, MD, FACEP,
Position: Volunteer Dive Program Dive Medical Officer, Associate Professor of Emergency Medicine, Assistant Chief Emergency Services and Director Hyperbaric Medicine Program
Address: UPMC Presbyterian
200 Lothrop St. Rm CL-06,
Pittsburgh, PA 15213
Telephone: 412 647 7480

II. Conditions which may disqualify a candidate from diving

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 tube 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 (unless otherwise noted, this list is from Bove, 1998).

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 (Grundy *et al*, 1999). [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 (Elliott, 1992). [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]

**III. DIVING MEDICAL HISTORY FORM
To Be Completed By Applicant-Diver**

Name	Age	Sex
Sponsor (Dept./Project/Program/School, etc.)		Date (M/D/Y)

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 they 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 respect the advice and the intent of this medical history form.

Please mark either Y (yes) or N (no) for each of the 34 items below: If you mark Y for any of these, please use the comment section below to explain.

	Have you ever had or do you presently have any of the following?	Y/N
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	
26	Hospitalizations.	
27	Do you take any medications?	
28	Do you have any allergies to medications, foods, and environmental?	
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 all “yes” answers to the above questions:

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

Signature of Applicant	Date (M/D/Y)
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**IV. SCUBA DIVING FITNESS MEDICAL EVALUATION REPORT
To be Completed by an MD/DO**

Name of Applicant _____ Date (M/D/Y) _____

To the PHYSICIAN (please initial): 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 AAUS Exam for ALL ages

AAUS Re-examination: Every 5 years under 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
 _____ Chest X-Ray
 _____ Spirometry
 _____ Hematocrit or Hemoglobin

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 _____ Complete Physical Exam, with emphasis on neurological and otological components
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 _____ Urinalysis
 _____ Any further tests deemed necessary by the physician

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Additional testing for first over age 40

Additional testing for over age 40

_____ Resting EKG
 _____ Assessment of coronary artery disease using Multiple-Risk-Factor Assessment (Grundy *et al*, 1999) (age, lipid profile, blood pressure, diabetic screening, smoker) Note: Exercise stress testing may be indicated based on risk factor assessment (Gibbons, 1997).

_____ Resting EKG
 _____ Assessment of coronary artery disease using Multiple-Risk-Factor Assessment (age, lipid profile, blood pressure, diabetic screening, smoker) Note: Exercise stress testing may be indicated based on risk factor assessment (Gibbons, 1997).

RECOMMENDATION (elaborate in REMARKS)

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

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.

My familiarity with applicant is:

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

My familiarity with diving medicine is:

Signature of MD/DO **Date (M/D/Y)**

Name: _____

Address: _____

Telephone: _____

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 Pittsburgh Zoo & PPG Aquarium’s Diving Safety Officer and Diving Control Board or their designee at The Pittsburgh Zoo & PPG Aquarium.

Signature of Applicant **Date (M/D/Y)**

V. 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.

Alert Diver Magazine; Articles on diving medicine

<http://www.diversalertnetwork.org/medical/articles/index.asp>

Bove, A. and Davis, J. (1997) **Diving Medicine**, 3rd Ed. W.B. Saunders Company, Philadelphia

Bove, A. M.D., Ph.D. (ed.) (1998) **Medical examination of sport scuba divers**. Medical Seminars, Inc. San Antonio, TX

Edmonds, C., Lowery C. & Pennefather J. (1994) **Diving and subaquatic medicine**, 3rd Ed. Butterworth-Heinemann Ltd. Oxford

Elliott, D. (1996) **Are Asthmatics Fit to Dive?** Undersea and Hyperbaric Medical Society, Kensington, MD.

Gibbons RJ *et al.* (1997) **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.
<http://circ.ahajournals.org/cgi/content/full/96/1/345>

Grundy *et al.* (1999) **Assessment of Cardiovascular Risk by Use of Multiple-Risk-Factor Assessment Equations**. AHA/ACC Scientific Statement.
<http://circ.ahajournals.org/cgi/reprint/circulationaha;100/13/1481>

Superintendent of Documents, **NOAA diving manual**. NOAA. U.S. Government Printing Office, Washington, D.C.

Superintendent of Documents, **U.S. Navy Diving Manual**. U.S. Government Printing Office, Washington, D.C.