

## UCSC SCUBA DIVING MEDICAL EXAM PACKET

This packet consists of the following parts:

- Part 1 - SCUBA Medical Exam Overview for divers and Instructions for completing clearance process
- Part 2 - Information for examining clinicians, including List of Possible Contraindications to Scuba Diving
- Part 3 - Diving Medical History Form
- Part 4 - Physical Examination-Scuba Diving Form
- Part 5 - SCUBA Diving Medical Evaluation (2-sided form for results of exam)

### **Part 1- SCUBA Medical Exam Overview for Divers and Instructions for clearance**

SCUBA diving makes considerable demands on your physical and emotional condition. SCUBA diving in the presence of certain medical conditions may pose grave risks not only for yourself, but 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 SCUBA diving or training program. **Verification of physical fitness for SCUBA diving must be on file in the UCSC Diving Office BEFORE you can SCUBA dive in UC Santa Cruz programs.**

The UCSC Student Health Center conducts a medical surveillance program for UCSC SCUBA divers. Medical clearance is required before approval for scuba diving is given. All aspects of evaluation and testing are conducted under the supervision of the Medical Director. Final decisions for medical clearance are made by the UCSC Medical Director or designee. There are fees for the physical and all laboratory tests, even if you are determined to be unfit to dive. The following table summarizes the requirements for SCUBA clearance for all classes of divers.

<b>OPERS Recreational Divers</b>	<b>Scientific Divers – UNDER age 40 Initial exam</b>	<b>Scientific Divers – UNDER age 40 Periodic re-exam - every 5 years</b>	<b>Scientific Divers –OVER age 40 Initial exam <i>and</i> Periodic re-exam - every 3 years (every 2 years if over age 60)</b>
Medical History	Medical History	Medical History	Medical History
Complete Physical Exam, (emphasis on neurological and otological components)	Complete Physical Exam, (emphasis on neurological and otological components)	Complete Physical Exam, (emphasis on neurological and otological components)	Complete Physical Exam, (emphasis on neurological and otological components)
Chest X-ray	Chest X-ray	At discretion of examiner	<b>Initial exam</b> —Chest X-ray <b>Re-exam</b> —at discretion of examiner
	Spirometry		Spirometry
Audiogram	Audiogram	Audiogram	Audiogram
CBC	CBC, Chem profile	CBC, Chem profile	CBC, Chem profile
Urinalysis	Urinalysis	Urinalysis	Urinalysis
			Resting EKG
			Assessment of coronary artery disease risk factors including lipid profile and diabetic screening Exercise stress testing may be indicated based on risk factor analysis
Any further tests deemed necessary by the clinician	Any further tests deemed necessary by the clinician	Any further tests deemed necessary by the clinician	Any further tests deemed necessary by the clinician

If a diver wishes his or her personal clinician to supply information and test results pertaining to their health status, this information will be considered in this decision. Medical evaluations performed by non-UCSC clinicians must be reviewed by the UCSC Medical Director or designee. There is a fee for the service.

The process of a diving physical will take several visits to the Student Health Center. You are responsible for knowing which specific medical tests are required for your physical. **Please fill out the “Diving Medical History” form before your appointment for examination and give it to the clinician at the time of the physical exam, along with the other forms in this packet.**

Once clearance is granted, the SCUBA diver should take the signed form to her/his SCUBA instructor for the required training using Self-Contained Underwater Breathing Apparatus (SCUBA).

**See next page for specific instructions for completing SCUBA exam requirements**

## How To Complete SCUBA Exam Requirements at the UCSC Student Health Center:

**Step 1. CONTACT THE APPOINTMENT DESK**—Call 459-2500 or you may come in to the Student Health Center to schedule an appointment in person. Specify *Recreational or Scientific*, as requirements differ.

**The Appointment Assistant will:**

- Set up appointments for your physical exam, hearing test (audiogram), and if needed for *Scientific diving*—EKG and Spirometry.
- Complete orders for your lab work and chest x-ray.

**Note:** *X-Ray and Spirometry are not currently available during the summer.*

**Step 2. Get your Lab work and chest x-ray done at least One Week Before your scheduled physical exam appointment. You must have first had the necessary tests ordered by the Appointment Assistant (see Step 1).**

- **Laboratory Testing—Tuesday-Friday 9:30-4:00 PM** (2<sup>nd</sup> Floor of Student Health Center)
  - Scientific—must be fasting for the blood draw.
  - Tell the lab staff whether you are a Scientific **or** Recreational diver.
- **Chest X-Ray—Tuesday-Friday 12:30-4:00PM** (Basement Level of Student Health Center)
  - X-Rays will be read by specialists and become part of your medical record.
  - Not available during summer or school breaks.

**Step 3. Come in for your Physical Exam Appointment.**

- Make sure your lab work and chest x-ray were done a minimum of 1 week prior.
- Bring all of your SCUBA forms with you. You **must** complete the attached Diving Medical History Form **before** the physical exam appointment.
- You will see a clinician who will review your test results, do your physical exam and evaluate your fitness for diving.
- If you are cleared, **YOU** must bring the signed Medical Evaluation Form to your SCUBA instructor.

**If you have your medical evaluation to dive completed by a non-UCSC clinician, a UCSC clinician MUST review your medical file. This is done by appointment only. Please call 459-2500.**

- Your clinician must complete and sign the “Physical Examination—SCUBA Diving” and “SCUBA Diving Medical Evaluation (2-sided) forms.
- You must bring with you or have sent to UCSC Student Health Center: the 2 forms your clinician signed and copies of: your laboratory results, audiogram result, radiologist report and for scientific, EKG and spirometry results. You are responsible for assuring that these forms and the results of all the testing gets to the Student Health Center.
- You must make an appointment for a clinician at the Student Health Center to review your medical file and obtain a clearance **BEFORE** diving under UCSC auspices.

**Please remember that if your medical records need to be reviewed or you need to see a specialist, completing your diving physical may take extra time. Plan Ahead.**

## **Part 2 - UCSC SCUBA DIVING MEDICAL EXAM - INFORMATION FOR THE CLINICIAN**

TO: EXAMINING CLINICIANS  
 FROM: U.C. SANTA CRUZ DIVING SAFETY PROGRAM  
 RE: Medical Evaluation for Participation in the UCSC Scientific SCUBA Diving Program

This person requires a medical examination to assess their fitness for training as a UCSC SCUBA diver. He or she should have completed a medical history form and should present it to you for review at the time of the examination. To assist you in making this evaluation, this packet includes information regarding potential disqualifying conditions and appropriate references (see reverse side).

The attached **Physical Examination-SCUBA Diving** form is to be completed by you and used, with the **Diving Medical History** form, as the basis for completion of the **SCUBA Diving Medical Evaluation** (2-sided) form. The basic physical examination must include the laboratory tests and other evaluations listed below (please note age specific requirements) and all the items on the “Physical Examination-SCUBA Diving” form.

A **UCSC clinician** must then review the diver’s medical file including **all** test results, completed “Physical Examination-SCUBA Diving” and “SCUBA Diving Medical Evaluation” forms. After reviewing the results of your evaluation a UCSC clinician will give the diver final medical clearance to dive under the auspices of UCSC.

All test results (audiometry, laboratory, x-ray and if scientific—EKG and spirometry), “Physical Examination-SCUBA Diving” and “SCUBA Diving Medical Evaluation” forms should be either given to the diver, Faxed 831.459.3546 or mailed to:

Student Health Center—Attention Medical Records  
 University of California Santa Cruz  
 1156 High St.  
 Santa Cruz, CA 95064

Any questions regarding the exam can be addressed to the Diving Safety Officer Steve Clabuesch, 831.459.4286 voice, 831.459.3383 fax or e-mail [srclabue@ucsc.edu](mailto:srclabue@ucsc.edu).

<b>OPERS Recreational Divers</b>	<b>Scientific Divers – UNDER age 40 Initial exam</b>	<b>Scientific Divers – UNDER age 40 Periodic re-exam every 5 years</b>	<b>Scientific Divers –OVER age 40 Initial exam and Periodic re-exam every 3 years (every 2 years if over age 60)</b>
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Chest X-ray	Chest X-ray	At discretion of examiner	<b>Initial exam</b> —Chest X-ray <b>Re-exam</b> —at discretion of examiner
	Spirometry		Spirometry
Audiogram	Audiogram	Audiogram	Audiogram
CBC	CBC, Chem profile	CBC, Chem profile	CBC, Chem profile
Urinalysis	Urinalysis	Urinalysis	Urinalysis
			Resting EKG
			Assessment of coronary artery disease risk factors including lipid profile and diabetic screening Exercise stress testing may be indicated based on risk factor analysis
Any further tests deemed necessary by the clinician	Any further tests deemed necessary by the clinician	Any further tests deemed necessary by the clinician	Any further tests deemed necessary by the clinician

## Important information for the clinician evaluating candidates for SCUBA 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 insufficiency. Most fatalities involve deficiencies in prudence, judgment, emotional stability or physical fitness. **Please consult the following list of conditions which usually restrict candidates from diving.**

### CONDITIONS WHICH MAY DISQUALIFY CANDIDATES FROM DIVING

(Adapted from Bove, 1998: 61 -63, bracketed numbers are pages in Bove)

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<sup>1</sup>. [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<sup>2</sup>. [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]

<sup>1</sup>"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>

<sup>2</sup>"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.

**Part 3 - DIVING MEDICAL HISTORY** – to be completed by diver **before** medical exam and reviewed by examining clinician at time of examination. Your answers to the questions in the diving medical history section are, in many instances, more important in determining your fitness than what the clinician may see, hear or feel when you are examined. Should your answers indicate a condition which might make diving hazardous, you will be asked to review the matter with your clinician. If your clinician concludes that diving would involve undue risk for you, remember that he/she is concerned only with your well-being and safety. Respect the advice and the intent of this medical history form.

Patient name \_\_\_\_\_ Age \_\_\_\_\_ Student/Staff ID or SS # \_\_\_\_\_

Phone \_\_\_\_\_ email \_\_\_\_\_

COMMENTS/DESCRIPTION

Y	N	
		1. Convulsions, seizures, epilepsy
		2. Fainting or dizzy spells
		3. Migraines or frequent headache
		4. Head injury with loss of consciousness
		5. Back pain or history of back injury
		6. Asthma
		7. Wheezing with exercise or breathing cold air
		8. Chronic cough or frequent bronchitis
		9. Collapsed lung (pneumothorax)
		10. Lung problem or shortness of breath
		11. Abnormal Chest X-Ray
		12. Do you smoke?
		13. Allergies, hay fever, nasal congestion
		14. Sinus problems
		15. Perforated ear drum, frequent ear infections, mastoid infections
		16. Trouble clearing ears (equalizing pressure in airplanes or when diving)
		17. Hearing problem
		18. Heart disease or heart condition of any kind, including: abnormal heartbeat or ECG, heart murmur, mitral valve prolapse, congenital heart abnormality, history of heart attack.
		19. Chest pain or Angina
		20. High blood pressure
		21. Blood disorder or bleeding tendency



# Part 4 PHYSICAL EXAMINATION FOR SCUBA DIVING

## VITAL SIGNS

Height \_\_\_\_\_ Weight \_\_\_\_\_ B/P (seated) \_\_\_\_\_ / \_\_\_\_\_ Pulse \_\_\_\_\_

Vision: Without lenses R 20/ \_\_\_\_\_ L 20/ \_\_\_\_\_ Corrected R20/ \_\_\_\_\_ J. 20 \_\_\_\_\_; Contact Lenses Yes \_\_\_\_\_ NO \_\_\_\_\_

## EXAMINATION

Check each item, giving details for abnormal findings			
	<i>Normal</i>	<i>Abnormal</i>	<i>Details</i>
1. General Appearance			
2. Skin			
3. Eyes			
4. Ears			
Valsalva			
5. Nose nasal septum, sinuses			
6. Mouth teeth gingivae, pharynx			
7. Neck			
8. Chest and lungs			
9. Breasts			
10. Heart			
11. Abdomen			
12. Hernia (unrepaired)			
13. Back and Spine			
14. Joints and extremities			
15. Operative scars deformities			
16. Neuromuscular			
17. Neuropsychiatric			

<b>TESTS</b>	<i>Date Performed</i>	<i>Normal</i>	<i>Abnormal</i>	<i>Details</i>
Vision/Color				
Chest X-ray*				
Audiometry				
CBC				
Urinalysis				
Chemprofile**				
EKG*				
Pulmonary function**				
**Scientific diving only		* Not required for recertification		

**Clinician Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

Name	SID#
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**Part 5 -**

**SCUBA DIVING MEDICAL EVALUATION**  
*University of California, Santa Cruz*

**Applicant's Name** \_\_\_\_\_

**SS#** \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ **Date** \_\_\_\_/\_\_\_\_/\_\_\_\_

**TO THE CLINICIAN:**

This person requires a medical examination to assess their fitness for certification as a SCUBA diver. She/He has completed a medical history form and should present it to you at the time of the examination. Because 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 sinus to equalize pressure. Any condition that risks the loss of consciousness should disqualify the applicant. There is a noticeable difference between recreational diving and scientific diving in that the scientific diver may feel obligated to dive due to deadlines and or sampling regimes despite a possible current health problem whether physical or emotional. Special attention needs to be paid to their health prior to certifying them as scientific divers. The basic physical examination must include the laboratory tests listed below (please note level of training and age qualifications).

**Your initials next to the specific lab tests are to confirm that the specified additional testing and lab work has been performed. Your evaluation and signature is requested on the back of this SCUBA DIVING MEDICAL EVALUATION and will indicate that this person has passed a basic physical exam, the required lab tests, and that no indications of conditions exist that preclude the applicant from SCUBA diving (see enclosed "Probable Contraindications to SCUBA Diving").**

**A UCSC clinician must review the diver's medical file and give the final clearance to dive.** The test results and UCSC SCUBA Medical Evaluation Form should either be given to the diver or sent to: Student Health Center, University of California, Santa Cruz, CA 95064. Any questions regarding the exam can be addressed to the UCSC Diving Safety Officer, (831) 459-4286 voice, 459-3383 fax.

The following reference is a useful guide to physical examinations of SCUBA divers:  
Medical Examination of Sport SCUBA Divers, edited by A. Bove, M.D. Third edition, Medical Seminars, Inc., Texas.

**Laboratory Requirements for UCSC SCUBA Diving Medical Examination:** *Clinician please initial tests completed.*

<b>1. OPERS Recreational Diver</b>			
Medical History	_____	Visual acuity	_____
Audiogram	_____	CBC	_____
Urinalysis	_____	Chest X-ray	_____
<i>Any further tests deemed necessary by the clinician to qualify the patient for scuba diving.</i>			
<b>2. Scientific Diver (Initial examination under age forty)</b>			
Medical History	_____	Visual acuity	_____
Audiogram	_____	CBC	_____
Urinalysis	_____	Chem Profile	_____
Spirometry	_____	Chest X-ray	_____
<i>Any further tests deemed necessary by the clinician to qualify the patient for scuba diving.</i>			
<b>3. Scientific Diver (Re-examination under age forty – every 5 years)</b>			
Medical History	_____	Visual acuity	_____
Audiogram	_____	CBC	_____
Urinalysis	_____	Chem Profile	_____
<i>Any further tests deemed necessary by the clinician to qualify the patient for SCUBA diving.</i>			
<b>4. Scientific Diver Initial examination OVER age 40 AND re-examination every 3 years (over age 60 every 2 years)</b>			
Medical History	_____	Visual acuity	_____
Audiogram	_____	CBC	_____
Urinalysis	_____	Chem Profile	_____
Spirometry	_____	Chest X-ray (Initial exam, may be	_____
Resting EKG	_____	required on re-exam at discretion of examiner)	_____
<input type="checkbox"/> <i>Assessment of coronary artery disease risk factors including lipid profile and diabetic screening</i> <input type="checkbox"/> <i>Exercise stress testing may be indicated based on risk factors</i>			
<i>Any further tests deemed necessary by the clinician to qualify the patient for SCUBA diving</i>			

**On the back of this sheet please check diver's status and sign in the spaces provided.**

### SCUBA DIVING MEDICAL EVALUATION

Applicant's Name \_\_\_\_\_ Date \_\_\_\_\_

Check one:             **SCIENTIFIC DIVER**            or             **OPERS RECREATIONAL DIVER**

**APPROVAL:** No medical contraindications to diving are present.

**APPROVAL WITH QUALIFICATIONS:** Evaluation indicates the presence of findings which, while not expected to seriously interfere with the applicant's ability to SCUBA dive at this time, might under some circumstances present increased risk or possible relative contraindication to diving. This type of approval is also indicated in the presence of conditions that have required clearance by appropriate specialists to evaluate fitness to dive. These findings and instructions regarding them have been explained to the patient and are noted below (see REMARKS).

**DISAPPROVAL:** The applicant has medical condition(s) which pose unacceptable risk to health and safety in diving. These findings have been explained to the applicant and are noted below (see REMARKS).

**REMARKS:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*If examination conducted by a non-UCSC clinician*

Signature of non-UCSC clinician	(Print or type) Name of non-UCSC examining clinician	Date
Address	Telephone and fax number	

My familiarity with the applicant is:  
 With this exam only             Regular clinician for \_\_\_\_ years  
 Other (describe) \_\_\_\_\_

My familiarity with diving medicine:

*Review by UCSC clinician*

Signature of UCSC clinician	Print name of UCSC clinician	Date
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**APPLICANT:** The clinician has reviewed the results of my examination and has fully explained possible risks that may affect my diving. I have been given the opportunity to ask questions to my satisfaction. I authorize the release of this information and all medical information subsequently acquired in association with my diving to the UCSC Diving Officer and Diving Control Board or their designee at UCSC

Signature of Applicant \_\_\_\_\_ Date \_\_\_\_\_.