

THE



RECREATIONAL DIVING MEDICAL

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1991

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It is suggested that members have the three pages of the medical form reproduced as the form which they use for their diving medical examinations.

The Statement of Health for Recreational Diving on page 11 should be reproduced and used as a certificate of fitness to dive.

APPENDIX A

PRE-DIVING MEDICAL EXAMINATION FOR RECREATIONAL DIVING

A1 INTRODUCTION

The medical criteria discussed in this Appendix are relevant only to examination of individuals considering entry-level recreational scuba diving and are addressed to registered medical practitioners. The medical criteria discussed in this Appendix are in no way exhaustive. The trained personnel doing the medicals are expected to use their own discretion. Criteria for medical examination of persons intending to train for occupational diving are given in AS 2299.

The medical examination shall be conducted by a medical practitioner who has done an approved course of training for medically examining candidates for recreational diving training. In the absence of a relevant regulatory authority, the Board of Censors of the South Pacific Underwater Medicine Society Incorporated (SPUMS) shall be the authority approving courses. Courses which have been approved at May 1999 are given in Paragraph A 5.

NOTE

SPUMS publishes a list of SPUMS members who have received appropriate qualifications and who do diving medicals. This list is posted on the SPUMS Website at <http://www.SPUMS.org.au>.

In the event of any difficulty in interpreting the Standards or if it is considered that the applicant may not be suitable for diving, the candidate should be referred to a specialist diving physician, one who holds the Diploma of Diving and Hyperbaric Medicine (DDHM) or an acceptable overseas equivalent, who may also, if appropriate, refer to a specialist in the medical area under question, e.g. otologist, cardiologist, respiratory physician, if such a specialist also has an appreciation of the requirements of compressed air diving.

The examination shall be carried out before the candidate first uses compressed air underwater. Preferably it should be carried out prior to commencement of any training in case a decision of unfitness disqualifies the candidate.

Results of the chest X-ray and specialist tests or opinion, if necessary, should be available at the time of examination and shall be known before a certificate of fitness to dive is issued.

The record of examination shall be retained by the medical practitioner. A certificate of fitness, unfitness or temporary unfitness pending further examination, to dive shall be forwarded directly to the diving school. A typical medical form with the certificate at the end is shown in Appendix B. Any medical problems, likely to influence the diver's safety should be included in the section marked "Advice" on the fitness to dive certificate.

The training establishment shall hold a record of the date of certification of fitness to dive, and the name and address of the medical practitioner who performed that examination.

A2 NEED FOR FITNESS CRITERIA

Although recreational diving may be undertaken in a relatively non-arduous fashion, survival of unexpected emergencies underwater, or on the surface will depend upon training, mental stability, and physical and medical fitness.

Physical fitness is not synonymous with fitness to dive. Any disorder which causes an increased risk of sudden death, impaired consciousness, impaired judgement, risk of disorientation, impaired mobility, risk of barotrauma and risk of decompression sickness may render a person unfit for scuba diving.

Divers are exposed to pressures and related physiological changes which do not apply to persons involved in other activities. Ambient pressure at 10 m depth in seawater is double that at the surface, and pressure changes capable of causing tissue tearing in unvented lung regions can occur upon ascent from as little as 1 m depth.

As diving is carried out in a non-respirable environment, any loss of consciousness is likely to result in drowning.

Specific standards are therefore required. Certain conditions are absolute contraindications to diving. (Some relative contraindications exist which may not permanently preclude diving.) If in the course of a medical examination such risk factors are identified, the prospective diver must be told of the condition(s) and informed as to the hazards and advisable restrictions associated with these conditions as regards diving.

A3 “CONDITIONAL” CERTIFICATES and ADVISORY NOTES

Conditional certificates should not be given. Advice with regard to limitations may be given to the candidate and should be written on the medical certificate as advice only.

Limitations may be applied to depths in excess of 18 metres, or decompression requirements, as long as these restrictions do not prevent the candidate from being certified according to the instructor organisation's requirement. Any restrictions relating to depth in excess of 18 m shall be provided in the “advice” section of the medical certificate.

NOTE: As the greatest proportionate pressure changes occur in water close to the surface, certificates restricting candidates to shallow water only, or interim certificates for “training dives only” are not allowable. Severe pulmonary overpressure incidents have occurred in as little as 1 m of water.

A4 FITNESS CRITERIA

A4.1 General

The bodily systems outlined in Paragraph A4.2 to A4.14 should be evaluated from the diver's history and the medical examination. The Example Form and Medical Certificate given in Appendix B may be copied for use by medical practitioners. The information and questions on the form shown in Appendix B shall form the minimum content of any alternative form used for recording the medical examination.

A4.2 Age

The minimum age for entry level scuba diving should be 14 years. Children between the ages of 14 and 16 shall only be medically examined after consultation by the doctor with a parent or guardian to establish the child's physical and psychological maturity. Between the ages of 16 and 18 it is preferable to consult with a parent or guardian before medically examining the child. No upper age limit applies provided that all medical standards can be met.

The cardiovascular fitness and pulmonary reserves of persons over 45 years of age should be examined carefully; emergency situations may demand a high degree of fitness. In addition, older divers have an increased susceptibility to dysbaric illness and cardiac death. A reduction in decompression stress is required with increasing age.

A4.3 General Fitness

Consideration must be given to the candidate having adequate reserves of physical fitness to cope with unexpected demands inflicted by adverse weather or sea conditions, surfacing away from a boat, having to aid a distressed buddy, or other emergencies.

A4.4 Obesity

Obesity may imply a lack of physical fitness and also represents a particular hazard to divers by causing increased risk of decompression sickness. Reduction in decompression stress is required with obesity.

A4.5 Vision

Although methods of using corrective lenses underwater are available, unaided vision should be adequate to allow location of a dive boat or a diver's buddy if a diver surfaces without mask and/or corrective lenses. Corrected near-vision shall allow reading of gauges, timing devices and decompression tables. A risk of corneal ulceration exists if non-permeable contact lenses are used.

A4.6 Ear, nose and throat

(a) Both tympanic membranes should be seen to be intact and mobile. The Eustachian tubes must be patent.

(b) Any evidence of chronic outer or middle ear discharge may be cause for rejection.

(c) Any evidence of chronic or recurrent sinusitis, catarrh or severe allergic conditions of the respiratory tract may be a cause for rejection.

(d) Any history of middle ear surgery (including tympanoplasty) should be referred for diving specialist opinion before any decision is made.

(e) Audiometry. Baseline audiometric examinations should be done. The audiogram shall be conducted at 500, 1,000, 2,000, 4,000, 6,000 and 8,000 Hz. An abnormal audiogram should be noted in the diver's log book. If there are any significant abnormalities in either audiometry or labyrinthine function the patient should be referred to a diving specialist.

Hearing loss is not necessarily a contraindication to diving.

NOTE: The middle ears and sinuses will develop problems on descent unless the pressure in these spaces equals ambient. There is no way of establishing the patency of sinus ostia by clinical examination. However, patency of the Eustachian tubes, and so the ability to equalise the middle ear pressures, can be established. Observation of the tympanic membranes while the patient holds his (or her) nose, shuts the mouth and blows (Valsalva manoeuvre) will show entry of air to the middle ear by movement of the drum. The Eustachian tube opening in the naso-pharynx is normally closed. Swallowing opens the ostium. Therefore, a combination of a Valsalva and swallowing during the manoeuvre will give the best chance for air to travel up the Eustachian tube. Another way of opening the Eustachian tube is to protrude and wriggle the jaw from side to side while performing a Valsalva manoeuvre. Failure to auto-inflate a middle ear is an absolute bar to diving until the person can auto-inflate.

A4.7 Dental

Dental fitness, dental plates and jaw function should be assessed for ease of retention of a diving regulator or snorkel mouthpiece. Carious teeth, or teeth with incompletely filled caries are at risk of dental barotrauma. Recent extractions can lead to air entering the tissues and causing subcutaneous emphysema.

A4.8 Central Nervous System

(a) A full examination of the central nervous system should show normal function. Any abnormalities should be accurately documented for future reference.

(b) A candidate with a history of fits (apart from childhood febrile convulsions), or unexplained blackouts, or a history of migraine requires further assessment.

(c) Candidates with a history of head injury involving significant unconsciousness or concussion associated with repeated headaches, or intra-cranial surgery should be individually assessed by a neurologist.

(d) The Modified Sharpened Romberg test is useful in assessing vestibular and cerebellar function, and should be tested as a baseline. This test is performed by having the candidate stand on a hard floor, barefoot, with the feet, heel to toe, in a straight line, with arms crossed on the chest. When steady in this position the eyes are closed. From the time the eyes are closed the ability to maintain balance is timed and recorded in seconds, e.g. the number of seconds the position is maintained. If the candidate fails to maintain the position for 60 seconds the test is repeated as often as necessary to establish a reproducible result. This is necessary as there is a learning curve which is much assisted by the candidate relaxing.

A4.9 Cardiovascular System

(a) A full examination of the CVS should be normal. There must be no evidence of heart disease or arrhythmias. Any abnormalities should be fully investigated.

(b) The resting blood pressure should not exceed 150/95 mm Hg.

(c) Further cardiovascular assessment, including ECG, exercise ECG, or specialist opinion may be indicated where any doubt concerning a candidate's cardiac fitness for exercise exists. The exercise ECG may be a valuable addition to the medical examination of all divers over the age of 45 and even those younger where significant coronary risk factors are present. These factors include obesity, smoking, elevated serum lipids and positive family history.

A4.10 Respiratory System

(a) A full history and examination should be normal. Any abnormal findings should be fully investigated. Such investigations should include provocation testing if any doubt concerning the possibility of bronchial hyperreactivity exists.

Particular attention must be paid to any condition that might cause retention and trapping of expanding gas in any part of the lungs during decompression (e.g. asthma).

(b) The following conditions may disqualify:

(i) Any chronic lung disease, past or present.

(ii) Any history of spontaneous pneumothorax, penetrating chest injuries, or open chest surgery.

(iii) Any fibrotic lesion of the lung that may cause generalised or localised lack of compliance in lung tissue.

(iv) Any evidence of obstructive airways disease e.g. current asthma, chronic bronchitis, allergic bronchospasm.

In cases of doubt, specialist medical opinion should be sought. Such opinion should include provocation testing if any doubt concerning the possibility of bronchial hyperreactivity exists.

(c) A full plate postero-anterior chest X-ray shall be performed on all candidates who have a significant past or present history of respiratory diseases, a family history of respiratory disease, abnormalities in the respiratory system on clinical examination or an abnormal pulmonary function test (see A4.10 d). If there is no history of cardio-respiratory disorders, a normal physical examination and normal lung function tests a chest X-ray may not be required.

(d) Pulmonary Function Tests shall be measured by equipment capable of reading to 7 litres.

(i) All divers shall have a pulmonary function test to establish Forced Expiratory Volume at 1 second (FEV_1) and Forced Vital Capacity (FVC).

(ii) A FVC or FEV_1 of more than 20 percent below predicted values and/or FEV_1 /FVC ratio of less than 75 percent requires further assessment.

A4.11 Gastro-intestinal Tract

(a) A full history and examination should be normal. Any abnormal findings should be fully investigated.

(b) Any abdominal herniation may be a cause for rejection until satisfactory treatment has taken place. Candidates should be free of significant acute or chronic gastro-intestinal problems that may cause an acute crisis, or which might cause incapacity in a remote situation (e.g. peptic ulceration). Specialist opinion should be sought if required.

A4.12 Musculo-skeletal

Any impairment of musculo-skeletal function should be carefully assessed against the potential requirements of emergency situations which might occur in the water. The mass of diving equipment out of the water can represent a significant hazard to those with pre-existing back or other joint injury or disease.

A4.13 Female

The safety of diving while pregnant has not been established. Risks of diving to the foetus are under investigation, but pregnancy shall be considered a contraindication to diving.

A4.14 General

(a) Dip-stick test of urine shall be performed and urine tested for albumin and sugar. Glycosuria calls for investigation before acceptance. Albuminuria may be innocent, but acceptance should be considered after 24 hour protein excretion studies. Any abnormal findings should be fully investigated.. Diabetes requiring medication with insulin is a contraindication to diving. Any haematological abnormality should be fully assessed.

(b) Candidates taking medication of any type, including non-prescription drugs, require individual consideration. Many medications have altered effects or risks underwater, or may increase decompression sickness risk, or the effects of nitrogen narcosis. Drugs that affect the cardiovascular, respiratory or neurological system, may be contraindicated. In particular, cardiac or central nervous system drugs require careful assessment.

(c) Cigarette smoking has deleterious effects on cardiac, pulmonary and upper respiratory systems and should be strongly discouraged in divers.

(d) The effects of alcohol can be detrimental to divers, increasing the tendency to vomiting, narcosis, dehydration and decompression illness. Dehydration following alcohol intake is a risk factor for decompression illness.

NOTE: Medical practitioners without training in diving medicine should not perform diving medicals. If for some reason the medical has to be done by someone untrained in this field, then any abnormalities detected, on either history or examination, should result in the candidate being made unfit to dive, until specialist medical advice, or an examination by a medical practitioner with training in diving medicine, has been obtained.

A 5 QUALIFICATIONS REQUIRED FOR MEDICAL PRACTITIONERS PERFORMING PRE-DIVING MEDICALS ON ENTRY-LEVEL SCUBA DIVERS

Registered medical practitioners shall undergo accredited formal training and have verified capability of performing diving medical examinations before carrying out pre-diving medicals in accordance with this Standard (AS 4005.1).

The Censors of South Pacific Underwater Medicine Society Incorporated (SPUMS) approve specific courses in the teaching of this skill. In May 1999 the Censors had approved the following courses:

Christchurch Hospital Basic Course
 Diving Medical Centre Medical Examiner Course
 Freemantle Hospital Medical Assessment of Divers Course
 Institute of Naval Medicine (U.K.) Medical Examiner course
 Royal Adelaide Hospital Basic Course
 Royal Adelaide Hospital Advanced Course (preceded by the basic)*
 Royal Australian Navy Diving Medical Course*
 Royal New Zealand Navy Basic Course
 School of Public Health and Tropical Medicine, James Cook University, Course in Diving Medicine
 Townsville General Hospital Diving Medical Course
 United States Navy Diving Medical Officer Course*

*denotes a course of at least 10 working days. It is a recommendation by SPUMS that only doctors who have satisfactorily completed one of the courses marked by an asterisk perform occupational diving medicals, AS 2299.

Note. The Diving Medical Centre Medical Examiner Course is designed for the examination of recreational divers.

It is likely that other courses of equal standing will be approved in the future. As a general rule for approval, at least 12 hours of any diving medicine course to be approved, should be spent specifically on the requirements of the diving medical examination. This 12 hours does not include a description of diving medicine, diving physics, etc. Any such course should also be under the control and instruction of specialist diving physicians.

Courses in introductory diving medicine, such as the Resort Medical Diving Courses and many of the others throughout the world, would not be accepted, on the basis that these are not specifically designed to teach doctors the techniques and complexities of diving medical examinations. Many of these courses bear no relationship to the Australian Standards required.

Special application can be made to SPUMS for recognition of training in underwater medicine.

The address of Board of Censors of SPUMS is

C/o Australian and New Zealand College of Anaesthetists,
630 St Kilda Road,
Melbourne, Victoria 3004, Australia.

APPENDIX B
PRE-DIVE MEDICAL FORM FOR PROSPECTIVE ENTRY-LEVEL SCUBA DIVERS
The first two pages to be completed by candidate.

| | | | | |
|----|--|-------------|-----|------------------|
| 1 | Surname | Other Names | 2 | Date of Birth |
| | | | 4 | Sex: Male Female |
| 3 | Address | | 5 | Telephone (Home) |
| 6 | Principal Occupation | | 7 | Telephone (Work) |
| 8 | Intended Dive School | | | |
| 9 | Do you participate in any regular physical activity? | | Yes | No |
| 10 | Description of activity | | | |
| 11 | Do you smoke? If so how many a day. | | Yes | No |
| 12 | Do you drink alcohol? | | Yes | No |
| 13 | How many drinks a week? | | | |
| 14 | Are you taking any tablets, medicines or drugs? List: | | Yes | No |
| 15 | Do you have any allergies? Details: | | Yes | No |
| 16 | Have you had any reactions to drugs or medicines or foods? Details: | | Yes | No |

Have you ever had or do you now have any of the following? Tick Yes or No.

| | Yes | No |
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Notes on History

| | Yes | No |
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| Have any blood relations had | | |
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| 88 | | |
| 89 | | |
| Females Only | | |
| 90 | | |
| 91 | | |

92 Date of most recent chest x-ray

| Previous Diving Experience | | Yes | No |
|-----------------------------------|---|-----|----|
| 93 | Can you swim? | | |
| 94 | Have you ever had any problem during or after swimming or diving? | | |
| 95 | Have you ever had to be rescued? | | |
| 96 | Do you snorkel dive regularly? | | |
| 97 | Have you tried scuba diving before? | | |
| 98 | Have you had previous formal scuba training? | | |

- 99 Year trained
- 100 Approximate number of dives
- 101 Maximum depth of any dive
- 102 Longest duration of any dive

I certify that the above information is true and complete to the best of my knowledge and I hereby authorise Dr to give medical opinion as to my fitness, or temporary or permanent unfitness to dive to my diving instructor. I also authorise him or her to obtain or supply medical information regarding me to other doctors as may be necessary for medical purposes in my personal interest.

Signed:

Date:

Note

Any chronic disease, such as hepatitis A, B, C, AIDS or tuberculosis, may increase your risks from diving. If you have a chronic disease please discuss it with the doctor who will then be able to advise you whether you will be at increased risk.

MEDICAL EXAMINATION: To Be Completed By An Approved Medical Practitioner.

| | | | | | | |
|---|--|---|---|---------|-------|-------|
| 1 Height cm | 2 Weight kg | 3 Visual Acuity R6/ Corrected 6/ L6/ Corrected 6/ | 4 Blood Pressure | 5 Pulse | | |
| 6 Urinalysis Albumen Glucose | 7 Respiratory function test (Measured by equipment capable of reading to 7 litres) Vital capacity FEV ₁ Percentage | | 8 Chest x-ray (if indicated) Date Place Result | | | |
| 9 Audiometry (air conduction) | | | | | | |
| Frequency, Hz | 500 | 1,000 | 2,000 | 4,000 | 6,000 | 8,000 |
| Loss in DB(R) | | | | | | |
| Loss in DB(L) | | | | | | |
| If abnormal enter in diver's log book and on certificate | | | | | | |

Clinical Examination/Assessment

| | | Normal | Abnormal |
|----|--|--------|----------|
| 10 | Nose, septum, airway | | |
| 11 | Mouth, throat, teeth, bite | | |
| 12 | External auditory canal | | |
| 13 | Tympanic membrane | | |
| 14 | Middle ear auto-inflation | | |
| 15 | Neurological Eye movements Pupillary reflexes Limb reflexes Finger-nose Sharpened Romberg | | |
| 16 | Abdomen | | |
| 17 | Chest auscultation | | |
| 18 | Cardiac auscultation | | |
| 19 | Other abnormalities | | |
| 20 | ECG if indicated | | |

Notes on Abnormalities

MEDICAL FITNESS TO DIVE

No contraindications
 Temporary contraindications (detail)
 Permanent contraindications (detail)

Advice put on certificate

Printed Name

Signed

Date

STATEMENT OF HEALTH FOR RECREATIONAL DIVING

This Section to be completed by a Medical Practitioner with appropriate training diving medicine.

This is to certify that I have today interviewed and examined:

Name.....

Address.....

.....

Date of birth...../...../.....

Initial the statements that apply:

..... I have assessed the candidate in accordance with AS 4005.1.

..... I can find no conditions which are incompatible with compressed gas, scuba and surface supplied breathing apparatus (SSBA) and or breath-hold diving.

..... I have explained the health risks of diving disclosed by this examination to the candidate and we have discussed how these risks may be reduced. The candidate appears to have a good understanding of these risks.

..... Based upon my assessment, the candidate should not dive with compressed gases (Scuba and SSBA).

..... Based upon my assessment, the candidate should not breath-hold dive.

Advice:

.....

(Signature of Medical Practitioner)

(Name, address and telephone number of the Medical Practitioner)

...../...../.....

(Date)

This Section to be completed by the Candidate.

Initial the statements that apply:

..... I understand the health risks that I may encounter in diving and how these risks may be reduced.

..... I also understand that the Medical Practitioner’s recommendation herewith is based, in part, upon the disclosure of my medical history.

..... I agree to accept any responsibility and liability for health risks associated with my participation in underwater diving, including those that are due to or are influenced by a change in my health and or my failure to disclose any existing or past health condition to the Medical Practitioner.

..... I hereby authorise the medical practitioner to supply information with regard to my medical fitness to dive to the diving instructor.

.....

(Signature of Candidate)

.....

(Name of Candidate)

...../...../.....

(Date)