

# PROGRAM



Capita Selecta Duikgeneeskunde



Decompression strategies, Doppler assessment and DCI treatment

A refresher course for physicians and other care professionals.

Date: 10 and 11 May, 2013

Location: AMC Amsterdam

## Repetition of advanced May 2012 course

The participants qualified this course with a score of 8.3 (of 10). In all respects, this course was a great success. One of them wrote: "... I did never learn so much as in this week.... I don't think that I was ever in such an illustrious team of teachers of dive medicine.....the location was excellent and the house reef breath-taking." Therefore, Capita Selecta Duikgeneeskunde decided to give this course once again.

## Aim

This course aims to give insight to the dive physician in decompression phenomena and the underlying theoretical background, decompression and risk management, in the theory and application of the various methods of VGE measurement with practical exercises in the precordial Doppler technique, in the pathophysiology of bubble damage, the pathophysiology and differential diagnostics of DCI and its treatment by first aid and clinical treatment, especially by HBOT. It also clarifies the problems in consultancy and patient referral.

After having attended the course, the participant masters the decompression theory at an advanced level, he has knowledge of- and some basic practical skills in the Doppler techniques and their limitations, can medically manage large dive events, also with Nitrox, and has theoretical knowledge of the use of gas-mixtures. Furthermore, he is able to diagnose DCI, and has the knowhow to treat dive casualties.

The course can be seen as an advanced refresher course. Having attended an elementary course on diving medicine is recommended (e.g. SHF or VSG).

## Subjects

Decompression phenomena and underlying theoretical background; construction of tables and algorithms of DCs and their physiological attributes; theory and application of the various methods of measurement of VGE with practical exercise in the precordial Doppler technique; VGE and AGE; the pathophysiology of bubble damage; predisposing factors; stress-factors; dive conditions; types of dives; recreational and commercial; (breathing) equipment; gas mixtures; risk assessment and decompression management; epidemiology of dive incidents; medical examination; the pathophysiology and differential diagnostics of DCI (with cases) and its treatment by first aid (cases) and clinical treatment (cases); especially by HBOT; consultancy and patient referring.

## Teachers

Jean Claude Le Péchon, MSc, MEng, Dr. Nico Schellart, Assoc. Prof. and Dr. Adel Taher.

## Staff

Dr. Nico A.M. Schellart, Eduard van Riet Paap MSc, administrator.

## Recommendation

The course is recommended by the Expertgroep Duikgeneeskunde of the Vereniging voor Sportgeneeskunde.

## Accreditation

The course is an advanced refresher course; basic knowledge of dive physics, physiology and medicine is supposed. The program comprises 13 hours oral contact hours and is assumed to give 13 points for the Dutch NVD, NVAB VSG and LHV.. The course members obtain a certificate after completion of the whole course.

Course members from outside the Netherlands should apply personally with their own accreditation office. We will support them administratively. The course content fulfils the standards of EDTC and ECHM for Medical Examiner, 2010, Level 1, subjects 1, 2, 4, and Level 2a, also subject 5.

### General: mission of the “AMC Capita Selecta Duikgeneeskunde”.

The Capita Selecta Duikgeneeskunde (CSD), refresher courses dive medicine, are given by the Academic Medical Centre (AMC), a one-board-cooperation of the medical faculty of the University of Amsterdam (UvA) and the academic hospital with the UvA. This hospital has a special position within the Dutch academic hospitals; it is the cradle, also in Europe of a related discipline, hyperbaric medicine, performed in the “Boerema Tank”. This new type of refresher courses, offered to dive physicians, has a typical ‘Alma Mater’ character.

In the first place, the AMC Capita Selecta present extensively and discipline-wise education in dive and caisson medicine. In addition, they also give education in new developments as they occur in the academic hospitals and medical faculties. This implies that, within the lessons, the characteristics of disorders are discussed, including their diagnostics and treatment, from the point of view of the present academic state of the art.

In short, the Capita Selecta are marked by a mix of education in the dive medicine of the respective discipline and up-to-date education in the discipline itself, for instance in cardiology, ophthalmology, otology etc. Also, the Capita will pay attention to the requirements of the medical examination.

The Capita are aimed for non-specialized physicians, first line physicians, sport and occupational physicians, professional dive physicians, clinical doctors and paramedical academics and technicians.

In general, the teachers have their affiliation with academic hospitals and medical faculties, and have an international reputation in patient care, academic education and/or medical research as becomes clear from their curriculum vitae.

To have lower thresholds for the courses given in the Netherlands, the venue is easy to reach and centrally located, and moreover the course is low-budget, something that also holds for the one-week courses outside the Netherlands.

### Responsibility

The Capita Selecta Duikgeneeskunde are given under the responsibility of the Academic Medical Centre, Univ. of Amsterdam (course leader Nico Schellart). The organization is by the Stichting Duik Research (SDR)<sup>1)</sup> and Biomed. Eng & Physics, AMC (Prof. Dr. Ir. A.G.J.M. van Leeuwen, chair).

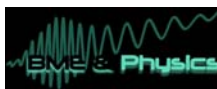
### Announcements

Ongoing small announcements about the course can be found at [www.duikresearch.org](http://www.duikresearch.org), [www.diverresearch.org](http://www.diverresearch.org) or are communicated by E-mail.

<sup>1)</sup> SDR is a non-profit organisation aimed to promote dive safety. Work for SDR is done voluntarily.

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Jean-Claude Le Péchon



Nico Schellart



Adel Taher

## The lecturers

**Jean-Claude Le Péchon** graduated as biochemical engineer from INSA in Lyon in 1963 and as marine biologist from Nice University. He has been employed at the Muse Océanographique of Monaco as a scientific diver as well as in the Conshelf III Experiment (the undersea habitat sponsored by Jacques-Yves Cousteau). Later he joined CEMA in Marseilles (J.Y. Cousteau) to do research on breathing gases and to develop procedures for very deep dives (1000 m with animals; 500 m with humans) and was a test diver in the Saturation II simulated dive at 400 msw. From 1973 to 1986, he served with CG DORIS, an offshore and civil engineering diving company. In 1986 he founded JCLP Hyperbarie, a global consultancy agency/ bureau specialized in questions related to life support and safety under pressure (commercial diving, tunneling, space and hyperbaric medicine). He has been involved in more than 75 tunneling projects with compressed gas mixtures, up to 6.9 bar and as well as in saturation diving technology. Although retired, he is still teaching physiology and the technology of diving- and hyperbaric medicine at several universities in France and all over the world. He is a National Instructor for SCUBA diving (Air, Nitrox and Trimix) and holds a deep sea commercial diver certification since 1974. He has published many papers in magazines, books and international congresses etc., and often speaks at international congresses on different topics concerning diving, hyperbaric medicine and compressed gas work.

**Nico Schellart**, graduated as biologist, specialized in physiological biomedical physics. He investigated visual information processing of the retina, resulting in a PhD in 1973 (UvA). He is an associate professor with the dept. of Biomedical Engineering and Physics of the AMC and associate editor of "Medical and Biological Engineering and Computation". He has investigated multi-sensory information processing in the brain, both animal and human. Since 1998 he performed clinical EEG and MEG research of the visual and auditory system. He has studied the brain and the visual system under hypoxic and hyperoxic conditions both in the lab and in the field and introduced HBO treatment for patients with cerebral radiation damage. He published these dysbaric and HBOT studies in e.g. Cancer, JAP and UHM in addition to his neuroscience papers and has contributed to a number of textbooks and conference proceedings (like EUBS and UHM). He teaches diving physiology. He is member of UHMS and EUBS, and has tested the technical and physiological performance of dozens of **dive computers** ([www.duikresearch.org](http://www.duikresearch.org)), and is a recreational scuba- and formerly a free diver.

**Adel Taher**, a diving instructor at the time, was the driving behind the multi-place and multi-lock chamber in Sharm el Sheik as he saw the need for a facility to specialize in diving related accidents. The chamber was built in the USA. He is, in addition to being director of the Hyperbaric Medical Centre in Sharm el Sheik also the founder and director of the diving chamber of Dahab. With over 200 diver-HBO treatments per year, he is without any doubt world leader and trained many physicians in hyperbaric medicine. Dr Adel is member of many international medical diving committees, and lectured about his work at universities, courses, etc. all over the world. He is also the director of DAN-Egypt, a member of the UHMS and of the EUBS (as the other lecturers). He also was the driving force behind the EUBS Annual Scientific Meeting in Sharm el Sheik in 2008. He is a recognized invited speaker at congresses such as those of EUBS and UHMS. Diving is still his passion.

## Educational program 10 and 11 May 2013

### Decompression strategies, Doppler assessment and DCI treatment

#### Friday, 10 May

- 9h00-9h05 Introduction Nico Schellart, course leader
- 1 9h05-9h45 Nico Schellart, Decompression theory (Neo-Haldanian theory, M-values, etc.)
  - 2 9h45-10h35 Adel Taher, Decompression illness (VGE, AGE, pathophysiology, molecular mechanisms);
  - 3 10h35-11h05 Nico Schellart, Bubble theory and models (surface tension, surfactant hypothesis, evolution of bubbles, VPM, RGBM deep stop)

Break

- 4 11h25-12h25 Adel Taher, Epidemiology of dive incidents in the Egypt Red Sea (classification, dive and physical conditions, profiles);
- 5 12h25-13h15 Jean Claude Le Péchon, Oxygen and decompression (alveolar and tissue oxygen tensions, oxygen in breathing mixtures, Oxygen Window, Oxygen stops, Oxygen in treatments, space decompression and zero gravity).

Lunch

- 6a 14h00-14h40 Adel Taher, Medical examination dive incidents (differential diagnostics; cases)
- 6b 14h40-15h00 Adel Taher, cases (dd).
- 7 15h00-15h40 Jean Claude Le Péchon, Use of dive procedures and types of dives (Recreational: SCUBA, Re-breathers)

Break

- 8a 16h00-16h40 Adel Taher, preclinical treatment (first aid, cases of dive accidents, medical dive accidents management, casus).
- 8b 16h40-17h00 Adel Taher, casus of preclinical diagnostics and treatment

17h00-17h15 Examination

17h15 17h45 Round table with evaluation and new ideas/concept in deco-theory.

Drinks

#### Saturday 11 May

- 9 9h00-9h50 Jean Claude Le Péchon, Decompression practical management (Standard depths, ascent pace, in-water stops (Air, Oxygen, Nitrox, Other mixes), Surface decompression)
- 10a 9h40-10h20 Adel Taher, HBOT with cases (types of dives, including tech-diving, nitrox, etc. and non-standard diver conditions, e.g. alcohol use etc.).
- 10b 10g20-10h40 Adel Taher, HBOT cases

Break

- 11 11h00-11h50 Jean Claude Le Péchon, DCI Risk assessment of recreational and professional diving activities (DCI risk, other safety factors, prevention, management of DCI in remote places, is "In-water-immediate-recompression" an appropriate response? With which procedure?);
- 12 11h50-12h50 Nico Schellart, The practise of Doppler techniques with small demonstration (precordial, Doppler, echography, bubble grade scales, KISS, after ascent).

Lunch

- 13 13h40-14h30 Jean Claude Le Péchon, Decompression of deep dives (Run-times, Saturation decompression, HPNS)
- 14 14h30-15h30 Jean Claude Le Péchon and Nico Schellart Environmental risks and human stress factors

Break

16h50-17h00 Examination (15 min)

17h00-17h40 Round table with evaluation and what will the future bring us (non-air diving, evolution of dive examination, etc.)?

Closure and drinks

Total educational contact time 13h10.

Disclaimer: Capita Selecta Duikgeneeskunde (i.e. AMC and SDR) is bound to execute the educational program, but small program changes are under reserve.