

DAN: Your Dive Safety Association

ALERT Diver

Spring Edition 2009, Vol 1 No 2

THE BENDS ■ Q&A ■ WHY DAN TRAINING

ALL THAT TINGLES IS NOT BENDS
Know the Difference

MEDICAL Q&A
The Most Frequently Asked
Questions Answered

SAFETY FIRST
DAN Covers Technical Divers

HOTLINE DESK NEWS
Statistics for the Beginning
of 2009 Included

ISSN 2071-7628

 **DAN**[®]
SOUTHERN AFRICA
DIVERS ALERT NETWORK

“

...it goes without saying I won't do another diving trip without DAN. DAN you were my lifeline when I needed help!

”

Julika, DAN Member

Divers Alert Network is a buddy like no other to tens of thousands of divers around the world, just like Julika. As a non-profit medical and research organisation, we are dedicated to the safety and health of all recreational scuba divers. Our membership cover, services and product sales all support the unique resources we offer to our community. So join us, and you will help us to keep helping divers, just like you...

That is being a real buddy.

www.dansa.org

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Safety first

illness. However, there are many potential causes of tingling. Many of these are not serious. Yet it is necessary to maintain an appropriate balance between ignoring trivial numbness (such as may occur after sitting in a fixed position for a period of time) and more serious causes such as DCI. The article is written to offer some perspective on the different causes of numbness and tingling and to better equip divers to make informed decisions about their symptoms. Importantly, any tingling that is associated with weakness, paralysis or any loss of function (e.g. bladder or bowel problems) constitutes a medical emergency and should receive prompt medical attention and treatment. The article ends by listing five common causes of tingling in the arms and legs that are almost invariably due to direct mechanical pressure on nerves due to diving equipment rather than the effects of an offending bubble!

In closing we would like to remind all instructors to make full use of our DAN Student Membership Programme. All that is required is for you to submit the names and contact details of the entry-level diving students participating in your classes and they will be enrolled automatically to receive the benefits of DAN membership cover for the duration of their dive training up to a maximum of six weeks. Note that the programme does not cover Discover Scuba Diving Courses or any courses after initial certification.

With that we invite you to enjoy this edition of *Alert Diver*. Please remember that we always welcome your comments, compliments or complaints. We like to know what we are doing right, but we also invite you to tell us where we can improve our services to you.

Thank you for continuing your support of DAN during these hard economic times. We appreciate your loyalty and support as we continue to find ways to improve our services to you.

Until next time – safe diving!



Dr Frans J Cronjé
President and CEO DAN Southern Africa

“
Most divers are aware that tingling of the skin may be a sign of decompression illness.
However, there are many potential causes of tingling.
”



Dear DAN members

We are delighted to issue our second local edition of *Alert Diver*. In this edition we will be addressing a multitude of topics in diving safety. There are two in particular that we would like to mention.

Firstly, we would like to draw your attention to the article on the Hazard Identification and Risk Assessment (HIRA) Programme for diving resorts and operations on page 38. The HIRA Programme is a welcome extension to our existing Diving Safety Partners (DSP) Programme. While the DSP Programme encourages diving businesses to partner with DAN in managing diving emergencies, the HIRA Programme is focused on avoiding the accidents and injuries before they happen by identifying and eliminating or managing various potential risks. The HIRA Programme may be used for any dive operation or dive site. Much more than a checklist of safety equipment or general preventative measures, which has been the typical approach to diving safety initiatives in the past, HIRA actually fosters a general mindset and attitude towards realising and minimising risks that can be applied to any environment. We are particularly grateful to Dr Jack Meintjes, one of only 18 specialists in occupational medicine in South Africa, for having pioneered this important programme. HIRA was field-tested for the first time in Cyprus recently and the article on page 38 also elaborates the outcomes of the experience.

The second article we would like to emphasise is *All that tingles is not bends* on page 20. Most divers are aware that tingling of the skin may be a sign of decompression

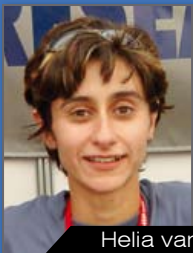
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FRONT COVER



Image by Sean Sequeira

IN A DIVE EMERGENCY

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TOLL FREE

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from **INSIDE** South Africa

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OR

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from **OUTSIDE** South Africa

DAN PUBLICATION PHILOSOPHY

Alert Diver Southern Africa is a forum for ideas and information relative to diving safety, education and practice. Any material relating to diving safety or diving medicine is considered for publication. Ideas, comments and support are encouraged and appreciated.

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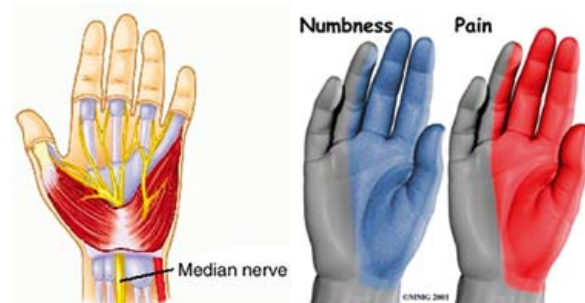
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DAN Letters & Comments



Dear DAN

I would like to take a brief moment to say a very, very heartfelt thanks to you and your organisation. I was recently in the position where I had to make use of DAN during a club trip and although the incident was unfortunate, I thank my lucky stars that I am a member of DAN!

Each person involved, from the operator to the doctor, were absolute stars and speaking as the patient, I can tell you that it was a huge relief knowing that there were professionals looking after me and guiding the people that were charged with the task of caring for me. Your staff were professional, calm and organised at all times, and I thank you for this. They went out of their way to continuously keep in touch and check up on me and offered a huge amount of help to my instructor and my fellow dive buddies, both during and after the incident.

They say something good always comes out of a bad situation, and I can say that due to the way DAN assisted us, many of my dive friends made a point of joining DAN immediately after my incident, which puts me at ease knowing that they are now in good hands should they ever need them.

Once again a huge thank you!

Claire
DAN member

for being there. The experience was life threatening and thanks to the support received, I have made an effectively complete recovery. I am, however, no longer able to dive due to the personal risks involved.

Again, many thanks.

JA

DAN member

Send your letters to:
Alert Diver Magazine
Private Bag X197
Halfway House 1685
or email to:
alertdiversa@dansa.org

FISH FUNNIES

Sometimes fish have their funny moments too, you know.
Share your funny fish images with us by sending your image and funny caption to alertdiversa@dansa.org



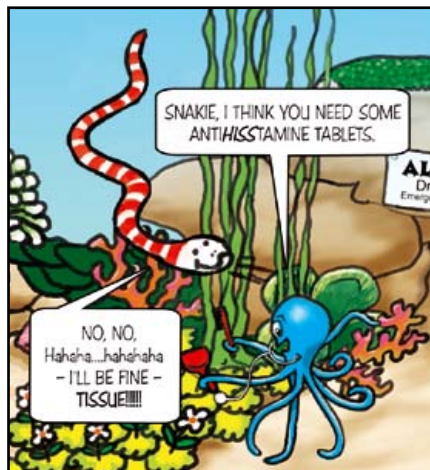
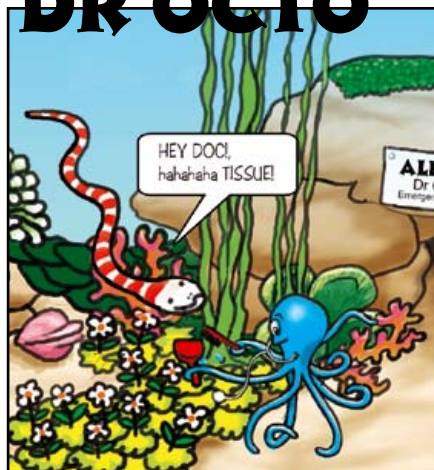
Image by Philip Smith.

Bill hung his head in shame after being reprimanded for referring to his mother-in-law as a cold-blooded reptile!

Dear Sirs

I was evacuated from Ponto Do Ouro (Manguzi) after a diving accident. This service was invaluable to me and the support I received was nothing short of fantastic. I thank all concerned

DR OCTO SPRING CLEAN



SONY

Cyber-shot



Marine pack

Images shot with a Sony Cyber-shot digital camera and Sony underwater housing. Photos courtesy of Fiona Ayerst: www.fionaayerst.com

MAKE A SPLASH WITH SONY'S NEW ULTRA-SLIM MARINE PACK

DSC-T90

- 12.1 Mega Pixels
- 4 x Optical Zoom
- Optical Super SteadyShot
- High ISO Sensitivity
- MPEG 4 Video Recording



MPK-THGB

- Fits DSC-T90
- Depth Capacity: Up to 40m
- Controllable Switches
- Hand Strap Diffuser
- O-Ring and Grease

Sony's new MPK-THGB underwater housing lets you use all the important controls and functions of your Cyber-shot camera while in the case, providing unequalled protection. Its revolutionary locking mechanism reduces the risk of the housing being opened underwater by mistake.

The ultra-light MPK-THGB houses Sony's latest Cyber-shot T-Series camera - the DSC-T90, which weighs under 135 grams yet boasts superb features like 12.1 Mega Pixel still images, Touch Screen LCD's and Sony's unique underwater shooting modes.

DSC-W290

- MS Duo/ MS PRO Duo
- 12 Mega Pixels
- 4 x Optical Zoom (DSC-W210, DSC-W230)
- 5 x Optical Zoom (DSC-W270, DSC-W290)
- Carl Zeiss Lens
- BIONZ™ Engine with Face Detection
- 2.7" LCD (DSC-W210, DSC-W270)
- 3.0" LCD (DSC-W230, DSC-W290)



MPK-WE

- Fits DSC-W210, DSC-W230, DSC-W270 and DSC-W290
- Depth Capacity: Up to 40m
- Controllable Switches
- Hand Strap
- LCD Hood
- Diffuser
- O-Ring and Grease

The Underwater Mode functions like a built-in colour filter by adjusting the white balance and producing more real and vivid colours in shallow water, and superior quality colour reproduction in deeper water. The three underwater modes allow for different diving conditions, such as very light blue water or green water.

Slim enough to fit into your BC pocket, and allowing you to submerge your camera up to 40 metres - the MPK-THGB housing and Sony Cyber-shot camera is the perfect combination for capturing your underwater experiences in incredible detail and truly realistic colour.



SEA & SEA

* Sea & Sea contact details: Johannesburg: (011) 704 0086 • Cape Town: (021) 511 7292

For your nearest dealer, visit www.sony.co.za or contact Sony Consumer Information Centre (011) 690-3555



OFFICIAL FIFA PARTNER

The DAN-SA Team

Read more about Francois:
Engineer Extraordinaire on page 40.

FRANCOIS BURMAN

Francois serves as the financial and operations director for DAN-SA. He is currently responsible for the operational, technical, safety, financial and insurance aspects of DAN and its programmes. He serves as treasurer on the board of International DAN and is the technical consultant for IDAN.

francois@hydra.org.za



The Core Team of DAN-SA

DR FRANS CRONJÉ



Frans is the founder, president and managing director of DAN-SA.

HELIA VAN ZYL



Helia serves as our DAN office manager where she is responsible for the operational aspect of DAN-SA's membership services and the staff.

helia@dansa.org

MORNÉ CHRISTOU

Morné manages special projects and marketing. He is also our Diving Safety Partners Programme (DSP) co-ordinator.

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DAWN CARVER



Dawn is responsible for supporting the DAN-SA medical information and emergency hotline during office hours. She works closely with Netcare when further assistance or evacuation is required and provides important quality assurance and customer care related to these calls.

danmedic@dansa.org

SEL-MARIE PEREIRA

Sel-Marie is our DAN membership services administrator. She is responsible for all aspects of membership administration, data capturing and sales.

sel.marie@dansa.org



TONI McQUILLEN



Toni serves as our membership services assistant and is responsible for assisting in the general day-to-day administration of DAN-SA membership as well as student membership.

toni@dansa.org



The DAN hotline is manned 24/7/365 by operators and doctors especially trained to deal with dive emergencies.

These are the doctors who take turns to be on call for the DAN-SA hotline:

DR JACK MEINTJES

Jack has served as the medical director of DAN-SA since 2007. Dr Meintjes has experience in hyperbaric medicine and has vast commercial diving medical knowledge and experience.



DR ISABEL DU PREEZ

Dr Du Preez is currently one of the directors of the emergency rooms at Akasia Hospital in Pretoria. She has served as a DAN medical officer since 2006.



DR MIKE MARSHALL

Dr Mike Marshall serves as the medical director for the St Augustine's Hyperbaric Medicine Centre since its inception in 2000 and has been a part-time medical officer to DAN since 2002.



DR LOURENS DE KOCK

Dr Lourens De Kock is one of the partners in a busy diving, aviation and maritime medical practice in Cape Town.



DR GARY MORRIS

Dr Gary Morris is a general medical practitioner from Scottburgh, KwaZulu-Natal.



DR ROB SCHNEIDER

Dr Rob Schneider is a general medical practitioner practicing full time in emergency medicine in Pretoria.





NEWS

from the DAN Hotline Desk

By Dawn Carver

“

Our good relationship with Netcare allows immediate access to road or air ambulance dispatch in an emergency.

”

The hotline has been buzzing with activity this year. New ideas have been implemented in order to offer you, our members, the special attention you deserve.

You may already be aware that I joined the team in January 2009 as the DAN in-house medic. This means that during office hours, incoming calls to the DAN hotline are handled directly by us in consultation with the DAN doctor on call. After-hours calls are still answered by a specially trained group of staff at Netcare 911, where all medical queries and emergencies are connected to the DAN doctor on call.

Our good relationship with Netcare allows immediate access to road or air ambulance dispatch in emergency cases as needed.

We can also boast that the hotline now has an upgraded case management system – which is secure and protected – called Medical Services Call Centre (MSCC).

Using this system, DAN South Africa is linked to all the other International DAN Organisations, making our reach truly worldwide. With the

combined information of the regions, we now have online global access to hospitals, physicians and chambers that can offer services worldwide in an emergency. We can also see whether these facilities are currently in service, temporarily closed for repairs or whether they offer 24-hour service and much more. In this way our members diving abroad can have peace of mind that the latest information is available for assistance with their emergencies.

Once a call is logged on MSCC, we are able to share the case management between the different DAN regions, for instance if a European diver is injured in South Africa, he/she will be assisted by the DAN-SA personnel, who have a better knowledge of local resources and facilities. The same principle applies to DAN-SA members diving in other DAN regions. Pre-authorisation for services and case handovers between two or more regions have also been simplified by the MSCC system, ensuring that you receive the best treatment available.

Another benefit of this data management system is the ability to perform analyses. This

allows DAN to examine and look for trends and to identify any areas or activities that cause increased risk.

The hotline will now also be assisting members with claims. Please note that a valid claim must include the following:

- Initial call placed with the hotline before any expenses are incurred (as soon as possible)
- Pre-authorisation for treatment issued by the DAN doctor on call
- Guarantees of payment (GOPs) placed with service providers in advance
- A claim form completed and submitted by a valid DAN member

DAN hopes this will aid in the daily management of emergency cases, and quicker settlement of costs incurred.

We would like to remind you that in order to activate any DAN membership benefits for an emergency you are required to contact the DAN hotline as soon as possible. The DAN doctor on duty will then pre-approve any services that are required and offer advice on correct medical care. Claims received that have not been pre-approved have the risk of not being settled in part or in full, but will be assessed upon their merits.

24-HOUR DAN HOTLINE:

0800 020 111 LOCALLY

OR

+27 82 810 6010 FROM ABROAD

The hotline is available 24/7/365 and we accept collect calls internationally. Please remember, if you travel outside the South African border, to activate your cell phone roaming or ensure that you will have use of a phone that can call internationally for emergencies. We are currently not able to receive SMS notifications or "please call me" texts.

The DAN hotline assists non-members with medical queries and emergencies, however the services used will be for their own account.

DAN HOTLINE ACTIVITY REPORT

The DAN hotline provides a range of medical services to DAN members and the diving community at large, including telephonic and email queries related to:

- General medical advice
- Fitness to dive queries
- Referrals for dive medical assessments
- Emergencies and evacuations
- Referrals to specialists
- HBO recompression sessions
- Providing remote dive site evacuation options
- Assisting with DAN international cases
- Telephonic standbys for deep/technical dives

STATISTICS:

Below is a summary of the hotline from January to June 2009 for the DAN-SA regions. During this period there were a total of 239 calls to the DAN hotline. Of these a total of 62 were emergency calls. There were 10 evacuations, one being an air evacuation from Mozambique to St Augustine's for DCS. The diver made a full recovery.


This also offers a flavour of the medical conditions and services DAN is involved with.

Emergencies	62
Non emergencies	141
Email queries	36
Air evacuations	1
Road ambulance	9
Chamber re-compression	14
Hospital admissions	21
Out patients	25
Surface O2 provided at scene	18
DCS	19
Barotrauma pulmonary	1
Barotrauma ear	11
Barotrauma other	4
Air embolism	1
Envenomation	5
Trauma dive related	2
Trauma non-dive related	0
Non-dive related	10
Other queries	73
Malaria queries	16
Fitness to dive	93
Swimmers ear	4

“

The hotline now has an upgraded case management system – which is secure and protected – called Medical Services Call Centre (MSCC).

”

Always feel free to contact the DAN hotline for any diving medical or emergency medical query. Most calls are non-emergency related. You are also welcome to email your medical query to us at: medical@dansa.org 



How to use the **FREE** Student Membership Programme

PLEASE NOTE:

Only initial entry-level courses leading to certification as a recreational scuba diver are accepted – students on DSD/Resort courses and similar courses do not qualify for this free cover.

WHERE DO STUDENTS SIGN UP?

Students need to ask their instructor to sign them up at the beginning of their course. If they do not have the forms, the diver can obtain these from DAN or download the application form for student membership on the DAN-SA website www.dansa.org under Membership – Student Membership.

Upon qualifying, we hope that newly certified divers will realise the benefits of becoming full DAN members.

Diving is a relaxing and enjoyable sport. It is not without risk, however, and injuries can and do occur. Most are of a minor nature, but sometimes a medical evacuation may be required due to the remoteness of the dive site. Also, recompression treatment may be needed. Both of these interventions may be excluded from a diver's medical aid and are very costly.

WHY DO STUDENTS NEED COVER?

Instructors often ask why students need cover, since they are supervised and usually not exposed to the same diving risks as certified divers are. The reality is that entry-level divers are inexperienced by definition, and therefore may develop problems just as readily as unsupervised divers. Injuries can occur during instruction; in fact, according to the DAN annual report on diving injuries and fatalities, student injuries have been the third leading type of injury associated with diving.

We also realise that entry into diving is not inexpensive. Training, equipment, travel and diving are costly and few novice divers are willing to redirect their limited financial resources to cover a risk they may not even fully appreciate. For this reason DAN has chosen to offer complimentary cover to student divers. Dive instructors are therefore well advised to take advantage of DAN's complimentary student cover programme now.

HOW MUCH DOES IT COST?

Complimentary. Active instructors who are DAN members apply on behalf of their students.

HOW LONG IS THE COVER VALID FOR?


For the duration of the entry-level course up to a maximum of six weeks.

WHAT ARE STUDENTS COVERED FOR?

Students are covered for emergency evacuation and treatment in the event of a diving-related injury.

This is a secondary cover to any medical aid/other insurance benefits the student may have when these apply.

This membership will cover the reasonable costs of emergency medical, surgical, hospital or chamber treatment as pre-approved by DAN, including:

- Decompression sickness (DCS), arterial gas embolism (AGE), or pulmonary barotrauma caused by a scuba diving or snorkelling activity.
- Any accidental injury which occurs in the water and/or is a direct result of a scuba diving or snorkelling activity. 

DAN STUDENT DIVER PLAN	
BENEFIT	AMOUNT COVERED
Medical Expenses and Assistance Services	
Emergency Medical Expenses <i>Including:</i> <ul style="list-style-type: none"> Medical assistance/monitoring Direct payment of in-patient emergency medical expenses <i>* Follow-up treatment not covered</i>	R300 000
Transportation and/or Repatriation <i>Including:</i> <ul style="list-style-type: none"> Medical evacuation, repatriation expenses or transport to medical centre expenses Coffin expense 	R300 000 R 10 000
Personal Emergency Assistance Services <i>Cover Including:</i> <ul style="list-style-type: none"> Cash advances Consular referral Emergency travel and accommodation arrangements Transmission of urgent messages Return of travel companion Accompanying family member Return of accompanying children Return in case of death or imminent death of close relative and/or close business associate Legal assistance abroad Burial, cremation or return of mortal remains 	Assistance Service Only
Personal Accident <ul style="list-style-type: none"> Public conveyance cover 24-hour cover 	R 50 000 R 50 000
Premium: <i>Sponsored by DAN and provided to you at no charge.</i>	



DAN

TRAINING & EDUCATION



Ask Your
DAN Instructor
How To Get
Involved



SAFETY TIP

Oxygen and someone trained in its use should be available at every dive site and on every boat.



24 HR EMERGENCY HOTLINE

Toll Free Number in South Africa

0800 020 111

International Number

+27 828 10 60 10

Info

0860 242 242

Website

www.dansa.org

Email

mail@dansa.org





Why DAN training?

By Morné Christou,
DAN Marketing and
Special Projects

As a scuba diver, you know that scuba diving injuries are unique and require specialist training to identify the signs and symptoms. Morné Christou reveals: Why DAN Training?

Why should scuba divers complete any of the DAN first aid training courses? The answer is quite simple. The DAN first aid courses have been developed to address specific scuba diving injuries as opposed to most first aid courses that only address general first aid.

As a scuba diver, you know that scuba diving injuries are unique and require specialist training to identify the signs and symptoms. Managing a scuba diving injury, on the other hand, can be challenging regardless of your level of safety training and, therefore, DAN believes it is essential for all scuba divers to equip themselves in the best way possible to deal with these maladies. This is what makes the DAN first aid courses stand out from the rest! Not only do you learn how to identify the problem but you are also taught what the cause of the problem is and how best to manage the specific dive injury.

DAN wants to ensure that divers who have completed any of the DAN first aid courses for scuba diving injuries are equipped to deal with an emergency situation.

A few years ago on a trip to Thailand we experienced the power of visual dive training, even though the method is not recommended. Upon arriving at the dive centre (which shall remain anonymous) I noticed an open water dive course in progress. The instructor was about to explain what a CESA is and how to perform the required skill. I could not believe

my eyes. There was the dive instructor standing with a cigarette in his left hand talking about a dive emergency and what to do when next he took a deep drag of his cigarette and started exhaling the smoke from his lungs while making the familiar “Aaah” sound we were all taught.

After this powerful performance, he said that this is what the students need to do in the swimming pool and the ocean but without a cigarette. It suddenly struck me that these students will never forget to make the “Aaah” sound when performing a CESA. Even though smoking and diving are not the best of friends, this time they teamed up to explain an important skill all scuba divers need to master.

Divers completing any DAN first aid course need to familiarise themselves with the equipment they are trained to use when assisting an injured diver. There is no value in just looking at the equipment or even using the equipment once or twice while on course. The DAN first aid courses stress the fact that each skill taught has to be mastered by every student by participating in the practical sessions before the instructor can continue to the next skill. In this way, every student will have multiple opportunities to master the equipment and the techniques needed to assist an injured diver.

DAN believes that its first aid courses are important to divers and non-divers. Let's explore this statement. While on a dive trip you are enjoying the diving tremendously because

the diving conditions are perfect. The water is crystal clear and the abundance of fish life is mesmerising, until you find yourself deeper than expected. This is your third dive of the day and your computer is shouting at you continuously. You correct your mistake immediately and after surfacing, while waiting on the dive boat for the other divers to surface, you have this thought eating away at you – What if I'm bent?

Back at the dive centre, you rinse all your gear when you notice a pain in your left shoulder and numbness in your left hand. You have a mild panic attack but still you deny that there might be a problem and decide that you are exhausted and that an afternoon nap will solve your worrying and that your body is just tired from the day's diving and needs to rest. After your nap, the problems are worse but you still deny that you have a problem when your wife, who does not dive, notices you continuously rubbing your left shoulder and hand in agony. She immediately identifies this behaviour as a potential dive injury and recommends you seek oxygen treatment from the dive centre and call the DAN hotline.

How did this diver's wife know how to identify a potential dive injury and how to manage it, you might ask yourself? This is no surprise because she completed the DAN Oxygen First Aid for Scuba Diving Injuries Course for Non-Divers, which enabled her to identify the problem and successfully manage it. To learn more about DAN's first aid courses for non-divers you can contact a DAN instructor in your region or call DAN on 0860 242 242 .

One question we often get from divers, though, is "Where can I learn more?"

They've taken every DAN training course available and have earned the designation as diving emergency specialists, but they are interested in learning more about dive safety and want to understand the specifics about diving and health. The problem has always been that DAN courses offered at a higher level are usually for advanced medical training.

In response to those ongoing requests, DAN, in co-operation with its international partners, has developed a new education course called Dive Medicine for Divers. This new course includes sections on fitness to dive, safety planning, decompression illness, barotrauma, gas toxicities, equipment-related problems and diving maladies that aren't pressure-related.

The first level of the Dive Medicine for Divers Course was released at the beginning of the year. Consult the training section of the DAN-SA website for a list of instructors who can offer the Diving Medicine for Divers Course.

The course includes: a selection of skills learned with an instructor, instructor-led lectures, video programmes and self-study information.

The first three sections include:

- Basic Examinations — This section teaches you how to evaluate a diver's respiratory and cardiac function using a stethoscope.
- Fitness to Dive — This section discusses what it means to be physically fit enough to dive and the conditions that can keep divers out of the water.
- Safety Planning — This section includes processes and procedures to make your dives safer and also discusses how to deal with the aftermath of a dive accident, including taking care of the diver's equipment for an investigation and taking care of the rescuers afterward.

In 2010, DAN will release Dive Medicine for Divers Level 2. Ultimately, more knowledge and a better understanding of how our bodies react to the pressures and stresses of diving help us to be safer divers. More information helps us understand our limitations and the dynamics of a rescue situation.

Diving is a great sport and to help make it safer for everybody contact the DAN office to find out how you can participate in one of the DAN Oxygen First Aid for Scuba Diving Injuries courses. **AD**

“
DAN, in co-operation with its international partners, has developed a new education course called Dive Medicine for Divers.
”



DAN Training & Education COURSES OFFERED



Entry-level courses



OXYGEN FIRST AID FOR SCUBA DIVING INJURIES

As a recreational diver, you can receive training to provide vital first aid that can make a difference to a scuba diver with decompression illness. The DAN Oxygen Provider Course provides entry-level training in the recognition and management of possible diving-related injuries using emergency oxygen first aid.



OXYGEN FIRST AID FOR AQUATIC EMERGENCIES

This course trains non-divers and professional rescuers (such as lifeguards) to recognise near-drowning/submersion incidents and other aquatic medical emergencies and to provide basic life support including the use of oxygen first aid.



FIRST AID FOR HAZARDOUS MARINE LIFE INJURIES

Serious hazardous marine life injuries are rare. Most divers experience minor discomfort from unintentional encounters with fire coral, jellyfish and other marine creatures. This course teaches divers to minimise these injuries and reduce diver discomfort and pain.



AUTOMATED EXTERNAL DEFIBRILLATORS FOR SCUBA DIVING

More than 10% of all dive fatalities are actually caused by cardiovascular disease, according to DAN dive accident and fatality statistics. This course teaches divers and other interested parties to provide care for sudden cardiac arrest including the use of an automated external defibrillator (AEDs).



AUTOMATED EXTERNAL DEFIBRILLATORS FOR AQUATIC EMERGENCIES

When a person drowns, they may or may not inhale water. They normally enter cardiac arrest because of the inability to breathe. This course teaches interested parties to provide care for cardiac arrest by using an automated external defibrillator (AED).



DIVE ACCIDENT FIRST AID FOR NON-DIVERS

This programme is designed for non-divers and teaches them how to recognise the warning signs of decompression illness and help provide care for a diver involved in a dive emergency.



Intermediate courses



BASIC LIFE SUPPORT FOR DIVE PROFESSIONALS

The remote nature of dive accidents, whether a few hours from shore or days from civilisation, frequently requires more advanced levels of care than are offered by traditional or entry-level CPR programmes.



ON-SITE NEUROLOGICAL ASSESSMENT FOR DIVERS (Pre-requisite: Oxygen First Aid for Scuba Diving Injuries)

Learn how to conduct a neurological assessment on a potentially injured diver in this course. The information gained in this assessment can help convince a diver of the need for oxygen first aid, and help a dive physician determine the proper treatment.



ADVANCED OXYGEN FIRST AID FOR SCUBA DIVING INJURIES (Pre-requisite: Oxygen First Aid for Scuba Diving Injuries)

This advanced-level programme is designed to train existing DAN oxygen providers to use the MTV-100 or a bag valve mask while providing care for a non-breathing injured diver.



Advanced courses



DIVE MEDICINE FOR DIVERS (Pre-requisite: DEMP and NEURO)

When you want to know more than just basic first aid techniques, Dive Medicine for Divers is your next step. Ultimately, more knowledge and a better understanding of how our bodies react to the pressures and stresses of diving lead to safer dives as we understand our limitations and the limitations of the situation.



Combination courses



DIVING EMERGENCY MANAGEMENT PROVIDER PROGRAMME

Learn the knowledge and skills from several courses in one single approach to dive emergency management.



Leadership programmes

INSTRUCTOR QUALIFICATION COURSE

To become a DAN instructor you must complete the DAN Instructor Qualification Course (IQC). Instructor candidates will complete a core module that offers more information about DAN and explains how to teach DAN programmes. Candidates will then complete the course module for each DAN training programme they are interested in teaching.

INSTRUCTOR TRAINER WORKSHOP

This programme teaches scuba diving instructor trainers to teach the DAN Instructor Qualification Course and train DAN instructors. Only DAN staff members and examiners can offer this programme. ^AD

Contact a DAN instructor in your region to take any of these courses. A full list of instructors is available from DAN-SA on 0860 242 242 or www.dansa.org under training.

On-Site Neurological Assessment for Divers


Only medical professionals should diagnose medical conditions. The information you gather while performing a neurological assessment will be useful to help the dive physician understand the extent of the injury and how it has changed in the time it took to get the diver from the dive site to definitive care.

- Motor function
 - Shoulders
 - Biceps and triceps
 - Finger spread
 - Grip strength
 - Hip flexors
 - Quadriceps
 - Hamstrings
 - Feet
- Sensory function
 - Light touch
 - Sharp touch
 - Balance and co-ordination
 - Walking
 - Finger-nose-finger



The neurological system is extremely complex and yet by performing a number of simple tests, a fairly reliable assessment of a patient's neurological status can be made.

Source: www.dansa.org
 By Dr Frans Cronjé,
 President & CEO, DAN SA



On-Site Neurological Assessment for Divers

History

DATE: _____

TIME: (hh:mm) _____

First Name: _____

COMPLETED BY: _____

MR: _____

Symptoms began:

- ☐ Before dive
- ☐ During descent
- ☐ At bottom
- ☐ During ascent
- ☐ At decs / safety stop
- ☐ On surface

What Symptoms are you feeling?

- ☐ Numbness and tingling
- ☐ Location _____
- ☐ Dizziness ("light headedness")
- ☐ Difficulty breathing
- ☐ Visual disturbance
- ☐ Ringing or buzzing in ear
- ☐ Other _____
- ☐ Decreased hearing
- ☐ Other _____
- ☐ Rash and itching
- ☐ Other _____

History of Last Dive

How Many Dives in Last 24 Hours

Time In	Time Out
<p>Maximum Depth _____</p>	<p>Safety Stop _____</p>
<p>Bottom Time _____</p>	

Breathing Gas

- ☐ Air
- ☐ Nitrox _____ %
- ☐ Trimix _____ O₂ _____ He/Ar _____ %/Ar _____ %/Ar _____ %
- ☐ Other _____

Unusual Features

- ☐ Rapid Ascent
- ☐ Misread Decompression
- ☐ Out of Air Ascent
- ☐ Difficulty Equalizing

Dive Planning

- ☐ Dive Computer _____
- ☐ Dive Table _____
- ☐ Other _____

Pain

Where? _____


Does it change with Movement? ☐ Yes ☐ No Rate the pain 0 1 2 3 4 5 6 7 8 9 10

Other Conditions

Nausea, vomiting? <input type="checkbox"/> Yes <input type="checkbox"/> No	Able to urinate? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure	
Difficulty walking? <input type="checkbox"/> Yes <input type="checkbox"/> No	Difficulty with balance? <input type="checkbox"/> Yes <input type="checkbox"/> No	Arm / Leg weakness? <input type="checkbox"/> Yes <input type="checkbox"/> No

From Observer (e.g., dive buddy, companion)

Confirm profile information with an observer and tick additional or conflicting information.



On-Site Neurological Assessment for Divers

Neurological Assessment

Vital Signs: Pulse Rate _____ /Min

Respirations _____ /Min

Blood Pressure _____ / _____

MENTAL FUNCTION

<p>Consciousness:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Alert <input type="checkbox"/> Verbal <input type="checkbox"/> Painful <input type="checkbox"/> Unresponsive 	<p>Orientation:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Person (what is your name?) <input type="checkbox"/> Place (where are you?) <input type="checkbox"/> Time (estimate what time it is?)
---	---

Ability to follow commands: Ask the diver to "Stick out your tongue and close your eyes." ☐ Yes ☐ No

Expression: Say - "red, white and blue" or "no its ants or bees" ☐ Yes ☐ No

Name 3 objects (e.g., comb, match, soda cylinder) ☐ Yes ☐ No

Read and interpret a sentence ☐ Yes ☐ No

Example: "The small boy walked to the lake with a large dog."

<p>Intelligence</p> <p>Why are you here? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Memory: 3 items, 3 minutes</p> <p>Repeat 3 objects identified earlier <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Calculations: Circle digits</p> <p>93, 86, 79, 22, 65, 56, 91, 44, 32, 30, 23, 16, 8, 2</p> <p>Able to complete <input type="checkbox"/> Yes <input type="checkbox"/> No</p>
--	--	--

Abstract reasoning/Proverbs: Interpret a proverb such as "A bird in the hand is worth two in the bush" Or "It stinks in time, saves nine" Could the diver explain the proverb? ☐ Yes ☐ No

CRANIAL NERVES

EYES: Forward Left Right Up Down _____

_____ any direction the diver cannot look

HEARING: Symmetrical: ☐ Yes ☐ No

FACE: Close eyes and smile _____

Is the face symmetrical? ☐ Yes ☐ No

LIGHT TOUCH: Forehead ☐ L ☐ R ☐ Cheek ☐ L ☐ R ☐ Arm ☐ L ☐ R ☐ Chin ☐ L ☐ R ☐

Identify any areas where the diver identified altered sensation.

MOTOR FUNCTION


Grading scale: No movement (0), Movement but weak (3), Normal (5)

<p>Arms: Shoulders <input type="checkbox"/> L <input type="checkbox"/> R _____</p> <p>Elbows <input type="checkbox"/> L <input type="checkbox"/> R _____</p> <p>Wrists <input type="checkbox"/> L <input type="checkbox"/> R _____</p> <p>Finger spread <input type="checkbox"/> L <input type="checkbox"/> R _____</p> <p>Grip strength <input type="checkbox"/> L <input type="checkbox"/> R _____</p>	<p>Legs: Hip flexors <input type="checkbox"/> L <input type="checkbox"/> R _____</p> <p>Knees <input type="checkbox"/> L <input type="checkbox"/> R _____</p> <p>Ankles <input type="checkbox"/> L <input type="checkbox"/> R _____</p> <p>Foot (left) <input type="checkbox"/> L <input type="checkbox"/> R _____</p> <p>Foot (right) <input type="checkbox"/> L <input type="checkbox"/> R _____</p>
---	---

SENSORY FUNCTION

Shade in any areas on the figure at right with decreased sensation using the symbols below.

LIGHT TOUCH: X PINK P BOTH B



COORDINATION AND BALANCE

WALK: ☐ Normal ☐ Wobbly ☐ Unable to Complete

FINGER-NOSE-FINGER: Able to complete ☐ Yes ☐ No

COMMENTS:

Spring 2009 **ALERT**Diver 15

Medical queries and answers...

Note: Many of the original questions and answers have been altered slightly to ensure confidentiality.

By Dr Frans J Cronjé

Q My doctor has recently put me on blood thinners (warfarin). Am I able to continue diving on this?

A The problems with diving while on warfarin are:

1. You "bleed more easily" and diving is often associated with minor trauma, e.g. scratches against coral, bruises against dive gear, and many other minor traumatic injuries. In people who are on warfarin therapy, the resultant bleeding can be a problem – even more so if diving in a remote area.
2. Diving is commonly associated with barotrauma. Many divers have problems with equalising their ears, causing minor bleeds into the middle ear or their sinuses, which in turn cause minor nose bleeds. Again, these bleeds may be clinically much more significant in the diver on warfarin. Barotrauma of the lungs could potentially be catastrophic in a diver who is on warfarin!
3. Decompression sickness (DCS) is a reality for all divers – even if you stay within the limits of the diving tables. Many manifestations of DCS are associated with bleeding – in particular (but not exclusively) those involving the inner ear and the spinal cord. If those small bleeds do not clot in the normal manner, the treatment of the DCS will be exceptionally difficult and the situation can result in permanent disability (e.g. deafness or paralysis), depending on the area affected.
4. Warfarin interacts with many different medications. Of concern in diving are the antibiotics divers use

for malaria prophylaxis. Some of these tablets may potentiate the effect of warfarin (leading to toxicity).

5. Diving commonly takes place in a setting with less access to specialised healthcare. Should complications arise, it may be difficult to manage and all the laboratory services, etc. may not be available.

Warfarin therapy is considered a "relative contra-indication" to diving. As long as the person's clotting parameters are within normal or well-controlled limits, and as long as the above concerns are minimised, a person on warfarin therapy can consider diving.

Our advice would be for you to be seen by a diving doctor who will assess your risk and discuss these issues with you, so that you are able to take an informed decision. It may be necessary for you to be referred to other specialists also. There are other issues that may also play a role in your fitness to dive, for instance:

1. The reason for taking the warfarin may be a contra-indication to diving (e.g. a pulmonary embolus may influence lung fitness; a heart rhythm problem may be more of a concern in diving than the warfarin itself).
2. If any other underlying disease is present (apart from the reason for taking the warfarin), this may be a contra-indication to diving.
3. Your diving experience, level of qualification, type of diving envisaged, place where you dive, etc. may have inherent risks that may need to be discussed.

It is thus necessary to look at this in a holistic manner. Please let us know if you need a referral to a diving doctor in your area.



Image by Sean Sequeira.

Q

I am currently busy with my NAUI instructor's course and a question popped up yesterday to which we did not have a definitive answer. I would really like to have DAN's opinion on this: If a diver has a pacemaker placed and there is an emergency situation, could one use the AED (automatic external defibrillator)? If not, what are the alternatives?

A

Yes, you can use an AED/defibrillator for someone with a pacemaker. One must simply not place the AED pad over the pacemaker bulge on the skin but rather place the pad adjacent to or below the bulge.

Having said that, it is important to distinguish between an implanted defibrillator and a pacemaker (an internal defibrillator should not require the use of an external defibrillator).

Secondly and probably most importantly is the consideration whether the person with the pacemaker is fit to dive.

There are several concerns relating to this:

- Why does the person have a pacemaker? Diagnosis?
- What medication is the person taking additionally?
- Is the pacemaker pressure tested and rated?



Image by Sean Sequeira.

Q

How soon can I return to diving after giving birth?

A

After a vaginal delivery, women can usually resume light to moderate activity within one to three weeks. This depends on several factors: prior level of conditioning, exercise and conditioning during pregnancy, pregnancy-related complications, postpartum fatigue and anaemia, etc. Women who have exercise regimens prior to pregnancy and birth generally resume exercise programmes and sports participation in earnest at three to four weeks after giving birth. Obstetricians generally recommend avoiding sexual intercourse and immersion for 21 days postpartum. This allows the cervix to close, decreasing the risk of introducing infection into the genital tract. A good rule of thumb is to wait four weeks after delivery before returning to diving.

After a caesarean delivery (often called a C-section), made via a surgical incision through the walls of the abdomen and uterus, wound healing has to be included in the equation. Most obstetricians advise waiting at least four to six weeks after this kind of delivery before resuming full activity. Given the need to regain some measure of lost conditioning, coupled with wound healing, and the significant weight-bearing load of carrying dive gear, it's advisable to wait at least eight weeks after a C-section before returning to diving. Any moderate or severe medical complication of pregnancy, such as twins, pre-term labour, hypertension or diabetes, may further delay return to diving. Prolonged bed rest in these cases may have led to profound deconditioning and loss of aerobic capacity and muscle mass. For women who have had deliveries with medical complications, a medical screening and clearance are advisable before they return to diving.

Q

I am a 55-year-old DAN member and I have a dive medical question.

I have previously been diagnosed with hypertension. I need to lower my cholesterol and I have recently been instructed by my doctor to thin my blood for one year. I am planning to reduce my weight from 110 kg to below 85 kg (which is my correct mass for BMI). I am currently quite active and I do exercise at least three to four times a week. I have been a scuba diver for about six years and wish to continue diving.

I had an angioplasty with three stents in my right coronary artery last month, but my cardiologist is hesitant to say whether I will be able to dive, as he is not a diving doctor.

What would DAN's opinion be on this and what are the criteria I should observe if I am able to dive again?

A

We are glad to learn that your surgery was a success and that you have not suffered any complications. It is, however, very difficult to give you a clear answer this soon in your recovery period.

A few years back, you would have been considered unfit to dive. However, these days cases are evaluated individually and on merit. The initial guidelines were applicable to commercial divers, where the criteria are more stringent and one is less able to choose your diving conditions.

Our opinion would be that if you recover fully, including: your weight, cholesterol, fitness level, a perfectly normal cardiac stress test and clearance by your cardiologist, that you are able to do exercise and if you do not need to take medication that is contra-indicated to diving (e.g. some blood pressure medications, beta-blockers and more), your case could be presented to the dive medical panel of the SA Underwater and Hyperbaric Medical Association (SAUHMA) for detailed recommendations that are very specifically individualised to your health and fitness status. We would thus strongly recommend that you see an experienced diving doctor in your area to advise you on all the relevant parameters and to conduct a fitness to dive medical on you when you have attained optimal fitness. The diving doctor will be able to provide your information to the SAUHMA panel. Please contact our offices for the diving doctor closest to you.

The European Diving Technology guidelines for ischaemic heart disease:

An individual found during the examination to have ischaemic heart disease prior to dive training should be declared permanently unfit to dive. All persons with symptomatic ischaemic heart disease are considered unfit to dive. The requirement for medication to control a cardiac condition is a contra-indication as well. Commercial divers who are symptom free following coronary bypass surgery remain unfit to dive, but an individual who has had percutaneous transluminal coronary angioplasty might be considered fit if after six months of the procedure:

- the procedure has been demonstrated to produce revascularisation;
- the person remains symptom free;
- the person has a normal stress ECG test; and
- the person can meet the physical requirements.

Such individuals will require careful assessment by a cardiologist, and if considered fit will require careful follow-up. Annual assessments, including full specialist evaluation, exercise testing and further investigation when considered appropriate (e.g. angiography), are required to assess the risk of an acute event occurring during diving.

The British Health and Safety Executive guidelines on ischaemic heart disease:

Symptomatic ischaemic heart disease is incompatible with diving. The requirement for medication to control symptoms is a contra-indication, but preventative medications such as aspirin or lipid-lowering agents are acceptable.

At the initial examination, an individual found incidentally to have ischaemic heart disease should be declared unfit. An individual who is symptom free following conventional coronary bypass surgery remains unfit to dive. An individual who has had percutaneous coronary intervention (angioplasty) or minimally invasive surgical revascularisation might be considered fit if:

- the procedure has been demonstrated to produce revascularisation;
- they remain symptom free;
- they have a normal cardiac stress exercise test to the relevant cardiological levels; and
- they can meet the physical requirements.

Individuals who have undergone revascularisation, as above, will require careful assessment by a cardiologist (with an interest in diving medicine) who will decide about the need for further follow-up.

Q

Can I dive while breastfeeding?

A

Yes – but not at the same time. **AD**



Image by Sean Sequeira.

SUN and DAN Partnership

IDAN has decided to sponsor a fellowship for medical doctors at the University of Stellenbosch, where they can be trained over a period of one year in diving and hyperbaric medicine.

DAN's mission statement, "DAN helps divers in need with medical emergency assistance and promotes diving safety through research, education, products and services" has remained the compass for DAN in serving the diving community of Southern Africa. DAN has always been well-known for the medical emergency assistance it provides to divers and the numerous research projects conducted and supported, including large studies on diabetes, flying after diving, ascent rate evaluations, project dive exploration, dive safety laboratory and many more. The DAN commitment to training and research has received a major boost in recent times by means of a formal "knowledge partnership" agreement between both DAN Southern Africa and DAN Europe with the Division of Community Health at the University of Stellenbosch.

As part of the partnership, DAN personnel have been appointed at the University of Stellenbosch and are involved in training and research, and university academics are providing valuable services to DAN (Dr Jack Meintjes is appointed as the DAN-SA medical director and Prof. Barney de Villiers is serving on the DAN-SA board of directors).

IDAN has decided to sponsor a fellowship for medical doctors at the University of Stellenbosch, where they can be trained over a period of one year in diving and hyperbaric medicine. This ensures a growing pool of highly qualified doctors that can serve the diving community. Apart from this training fellowship, there are also two six-month research fellowships to stimulate research in diving medicine. The first clinical fellowship has been awarded to Dr Cecilia Roberts, who will spend the next year at the University of Stellenbosch's hyperbaric facility. This state-of-the-art facility has recently opened its doors for hyperbaric treatments, including the treatment of diving injuries and the performance of diving medical examinations.

DAN has also supported a number of

doctors enrolled in the BScMedScHons (underwater medicine) degree programme. These doctors are required to perform a research project as part of their training. Dr Eben Viljoen has performed a study looking at the prevalence of middle ear barotrauma in recreational divers during their initial pool training sessions. The evaluation was performed by using a video otoscope (like the normal otoscope the doctor uses to look into your ear, linked to a video recorder). The video clips were sent to three respected diving doctors and two ear, nose and throat specialists for review. He has found that 45% of divers suffer some form of middle ear barotrauma during their first training pool sessions. An interesting observation was that most of these divers indicated that they had some difficulty equalising before they started with the dive – indicating that this barotrauma is preventable. Despite the high rate of barotrauma, very few divers (less than 10%) had moderate to severe barotrauma and only one diver had barotrauma to such an extent that diving had to be stopped. The conclusion: barotrauma during pool sessions is very common and should be prevented. Most divers will be able to tell the instructor beforehand that they have difficulty equalising or don't know how to equalise. Luckily, the barotrauma is mostly not severe. It is, however, necessary to look at the prevalence of barotrauma during the first open water dives, where it is likely to be more severe. A later study will look at prevention. **AD**

“

DAN personnel have been appointed at the University of Stellenbosch and are in training and research

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A patient receiving treatment in the monoplace chamber, with the multiplace chamber in the background. In this photo: Sr Surita Fitchat and Dr Frans Cronjé.



ALL THAT TINGLES IS NOT BENDS

By Dr Frans J Cronjé

Divers are taught to pay attention to any abnormal signs and symptoms after diving. They are instructed to consider them as being possible decompression illness (DCI) until proven otherwise. However, this attitude not only adds a certain amount of anxiety, but may also lead to an unhealthy level of attentiveness and concern about completely benign conditions that appear during or following diving activities. Dr Frans J Cronjé elaborates on the fact: all that tingles is not bends...

Mild headaches, mild transient joint aches, skin irritations and even mild tingling or numbness may be attributed to DCI quite erroneously, resulting in unnecessary medical evacuations, hospital admissions, recompression treatment and even the loss of diving fitness or a subsequent fear of diving. On the other hand, we do not want to discourage divers from seeking assistance nor should they deny or overlook potentially serious manifestations of DCI. There is a need to assist divers in better distinguishing between benign and serious conditions.

First of all, the risk can be reduced. Limiting the probability of developing decompression

disorders by performing 5-S (i.e. Shorter, Shallower, Sensible with Safety Stops) dives will reduce the concern that minor symptoms may be bubble-related. It does not eliminate the risk, however, and we would like to caution divers not to fall into the "I-was-diving-within-the-tables-so-I-cannot-be-bent" fallacy. As many as 50% of DCI cases in the DAN DCI database were diving within table or computer limits. However, conservative diving does reduce the chances of developing serious DCI, even if symptoms were to occur.

Another way to exclude an unnecessary over-diagnosis of DCI is to recognise certain common patterns of symptoms that are known to be due to causes other than DCI, even though they may be associated with diving activities. For instance, in the previous edition of *Alert Diver* we addressed the various causes of diving-related headaches. So in this article we will be discussing *paraesthesias* (i.e. Greek for "partial excitement" or "feeling"), which is an abnormal skin sensation usually described as burning, "pins and needles" or tingling.

PARAESTHESIA AND NEUROPRAXIA

Paraesthesia, or tingling, is the result of a partial interruption of sensory nerve conduction between the skin and the sensory cortex (i.e. the part of the brain responsible for making us aware of skin sensations). *Anaesthesia* is the result of a complete interruption of impulses. In most cases, *paraesthesia* is a very temporary and benign condition. Often, it is the result of direct pressure on a peripheral cutaneous nerve (i.e. skin nerve) due to a prolonged application of external pressure to the skin overlying a nerve. An example of this is the numbness that follows sitting in a fixed position for a period of time. These mild crushing or stretching injuries to nerves are called *neuropraxias*. This means that the structure of the nerve is preserved but it ceases to transmit impulses for a period of time. In most cases, reversal of symptoms follows pressure relief to the area almost immediately. However, with long periods of pressure it may take several days and in rare cases even weeks for skin sensation to recover and for tingling to subside. This may happen when

FIGURE 1

The sensory cortex of the brain: The coronal plane (A); a coronal section of the brain showing the surface grey matter (B); and a representation of the various sensory areas of the body on the surface (cortical) grey matter (C).

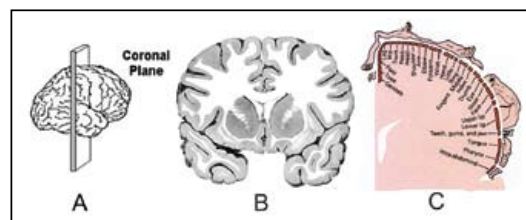
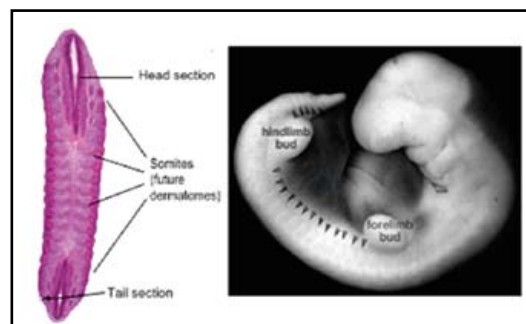


FIGURE 2

Embryo with sections called somites that eventually become dermatomes.



wearing tight-fitting or heavy gear such as a tight-fitting wetsuit, weight belt or heavy BC-tank configuration for extended periods of time.

Because any interruption in nerve conduction between the skin and the brain can potentially cause these disturbances, it is important to determine the underlying cause. Short-term *neuropraxia* due to a tight-fitting wetsuit is much less significant than arterial gas embolism or decompression sickness, yet both may cause numbness and tingling. Fortunately, it is possible to make these distinctions fairly easily with a little bit of background knowledge. That is one of the objectives of this article – knowing when tingling is serious and when it is not.

THE BRAIN, SPINAL CORD AND NERVES

Both *paraesthesia* and *anaesthesia* may be the result of damage to the brain, spinal cord or nerves. However, each of these latter injuries has a very specific distribution and it is possible, therefore, to make distinctions fairly easily.

The brain

The brain contains several functional areas. The surface layer of the brain (also called the grey matter) is where we perform conscious thinking, where voluntary movements are initiated (called motor function) and where the various physical sensations and the signals from our five special senses reach our consciousness (called sensory function). Figure 1 shows how the brain is divided into the coronal plane (A); followed by a coronal section of the brain (B); with a further illustration showing where the sensations from various body parts are recorded on the surface of the brain (C).

What should be obvious from this illustration is that a small injury to the cortex will result in a large area of skin numbness or tingling. Accordingly, cortical *paraesthesia* – as this is called – usually affects an entire arm or leg but rarely both simultaneously. In most instances it will be present on either the left or the right side of the body (i.e. *hemiparaesthesia* or *hemianaesthesia*). Usually there is also an associated weakness or paralysis of the affected area (i.e. *hemiparesis*).

Therefore, large areas of numbness – especially if a whole arm or leg is affected and there is associated weakness or paralysis – are very suspicious of brain involvement and require urgent medical attention.

Spinal cord:

Like our brain, the spinal cord also contains areas responsible for relaying impulses for movement and sensation. There are also a large number of interconnecting filaments (axons) that run between the brain and the target organs or tissues. The spinal cord is arranged like a stack of cylindrical disks in the unborn embryo (Figure 2). Each disk has a segmental nerve supply and

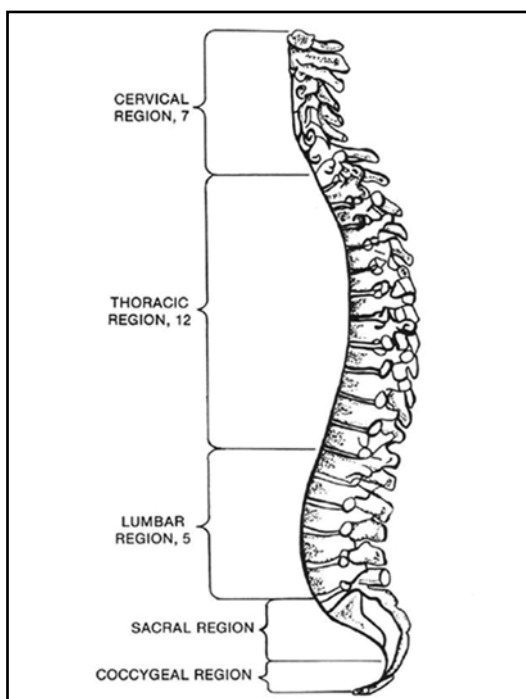


FIGURE 3

Vertebral column: 33 vertebrae associated with 31 pairs of spinal nerves.

maintains this relationship as the embryo grows and changes shape.

As the face and limbs form, the disks are stretched downwards and outwards. However, the sequence of the dermatomes remains unchanged even though they no longer look like a stack of coins. In the fully-formed foetus there are 33 divisions in the spinal column. Each has a corresponding vertebra or bone – seven in the neck (cervical vertebrae), 12 in the rib-cage or thorax (thoracic vertebrae), five in the small of the back (lumbar vertebrae), five in the sacrum (sacral vertebrae) and four in the tail bone (coccyx).

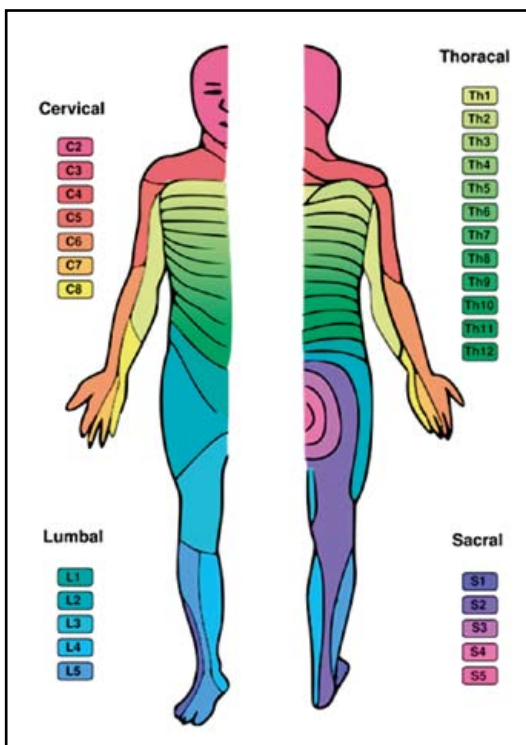
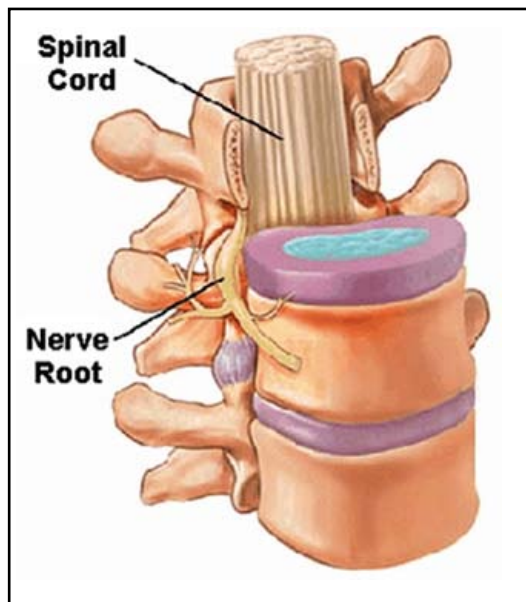


FIGURE 4

Dermatomes: The stacked somite disks in the embryo become dermatomes. The development of the arms and legs extend the original disks downwards and outwards.

FIGURE 5

Part of the vertebral column showing the spinal cord with its filaments and a spinal nerve root leaving the spinal cord in-between the vertebra. Notice the purple intervertebral disk. Rupture or bulging of this disk could affect the spinal cord and/or the spinal nerve roots. Spinal cord involvement results in more widespread, downstream, multi-dermatomal effects whereas spinal nerve root involvement causes effects in a single dermatome.

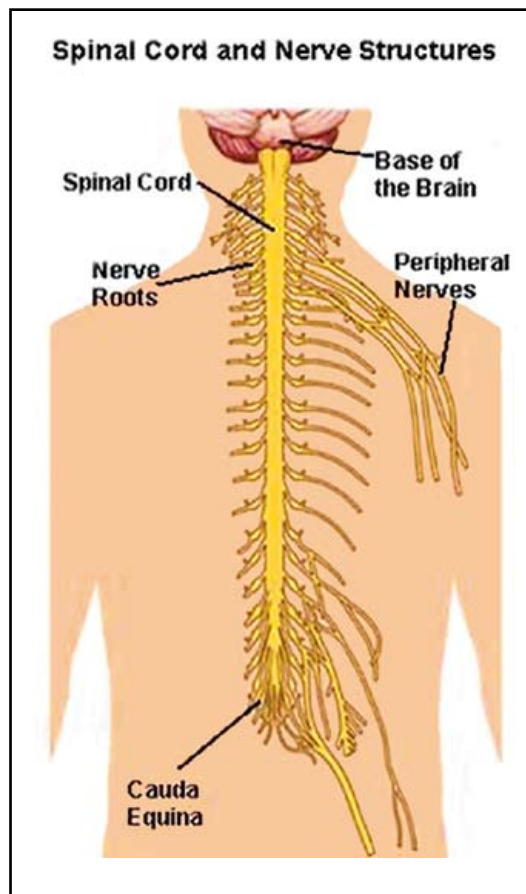


Without getting into the numbering of the associated nerves, which differs somewhat from the vertebrae, the general picture is apparent and it is illustrated in Figure 4. Notice how each of the disks in the embryo has now become a dermatome.

The reason for providing this background is that injuries to the spinal cord or spinal nerve roots affect the motor function and/or sensory function within the respective dermatomes. The difference is that an injury to the spinal cord also affects the subsequent dermatomes to some extent, as the nerve filaments are interrupted

FIGURE 6

Peripheral nerves are extensions of spinal nerve roots. However, in the area of the arm and the leg there is (1) a merging and mingling of nerves to make up the networks called the brachial (i.e. arm), lumbar (i.e. web or network) respectively; and (2) a subsequent separation of some nerve fibres into superficial or peripheral or cutaneous nerves (i.e. skin nerves).



on their journey from head to tail. A spinal nerve root injury only affects that specific dermatome.

Paraesthesias or weakness in the distribution of a dermatome indicates probable spinal cord or spinal nerve root involvement.

Although this may be due to other causes, such as a prolapsed intervertebral disk (i.e. the cushion of fibrous cartilage between vertebrae), these manifestations require urgent medical assessment. If there is associated weakness, paralysis or loss of bowel or bladder control, it is a medical emergency.

PERIPHERAL NERVES

Peripheral nerves are the continuation of the filaments (i.e. axons) in the spinal cord. They form the unbroken electrical links between the brain and the target organs or tissues they supply. The first section of these nerves, as they leave the spinal cord, are called spinal roots. In the sections of the spinal cord supplying links to the arm and the leg, the spinal roots mingle and merge to become a tangle of nerves called the brachial (i.e. arm), lumbar and sacral plexus (i.e. network or webs) respectively. (see Figure 6). The tangles eventually separate out into a number of blended peripheral nerves to supply the skin of the upper and lower limbs respectively.

This is one of the main reasons why there is a significant difference in the way spinal cord or spinal root damage presents vs. nerve plexus and peripheral nerve injuries. This is why this background is important. It allows us to make the necessary distinctions. Unlike damage to the spinal cord, which follows the "stacked" dermatomal pattern of sensory loss, injuries to the brachial plexus or peripheral nerves are patchy in nature. Figure 7 shows the important patches of skin supplied by these peripheral nerves.

If numbness or tingling is limited to a seemingly random patch of skin and does not affect the entire limb (i.e. it is not cortical/regional) or a circumscribed segment (i.e. it is not spinal/dermatomal), then it is probably due to a peripheral nerve or nerve plexus injury.

Importantly, from a management point of view, any injury or illness causing loss of strength, weakness or loss of function is to always to be considered a medical emergency. Similarly, all anaesthesia in an area that lasts more than a minute or two (e.g. due to direct mechanical compression of a nerve due to position or compression by diving gear, etc.) is in need of immediate medical attention. It is only in the area of partial sensory changes, or paraesthesias, where we would like to assist divers in distinguishing trivial from more serious injuries.

Figure 8 shows the contrast between spinal/ dermatomal vs. peripheral nerve distribution to the skin. This allows for easier distinction between the areas of skin that would be affected by injuries to the spinal cord or peripheral nerves respectively.

COMMON DIVING-RELATED INJURIES

Now that the distinction between dermatomal and peripheral nerve-related *paraesthesias* has been made, we will show five common diving-related conditions that are frequently attributed to DCI but are almost invariably related to a compressive injury of a peripheral nerve:

Brachial plexus injury ("heavy BC" syndrome)

Pressure on the upper parts of the brachial plexus present as numbness of the lower part of the forearm including the hand. This is common with heavy BCs in slender individuals.

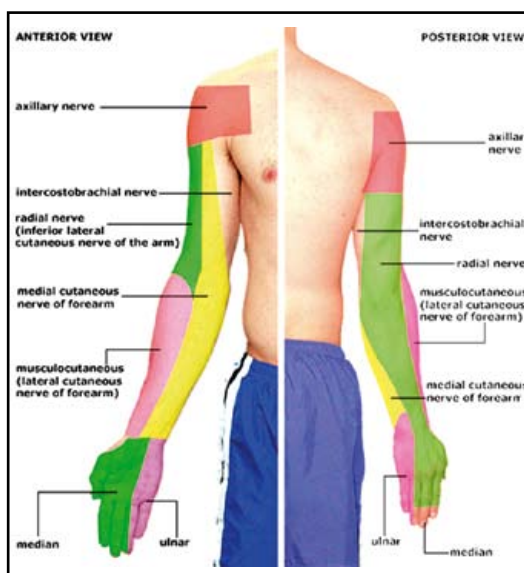


FIGURE 7

Peripheral cutaneous nerve distribution. These illustrations show areas of skin supplied by various cutaneous nerve branches for the upper limbs. Any partial interruption of conduction in the underlying nerves branching higher up in the arm or neck will result in burning or tingling in these areas. This differs from cortical or spinal-type injuries that have a more extensive or segmental distribution.

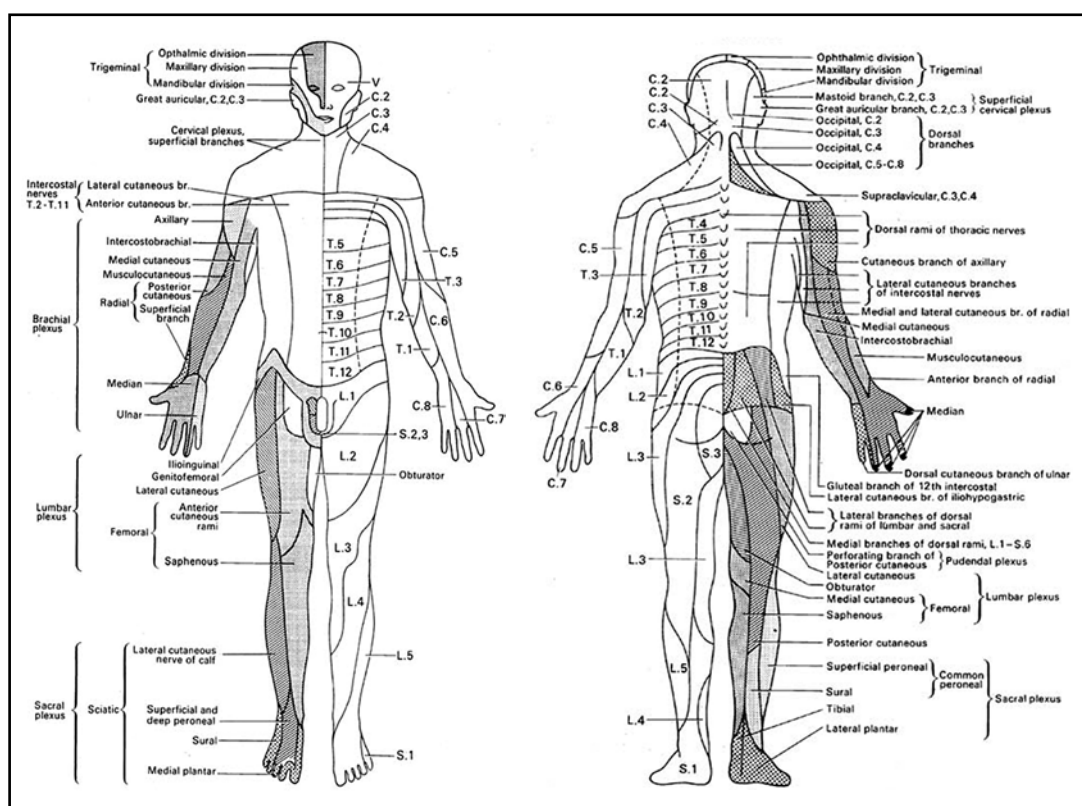


FIGURE 8

Peripheral nerve (shaded) vs. dermatomal distribution of skin sensation.

Ulnar nerve ("funnybone" syndrome)

Tight-fitting wetsuits or leaning on the elbow may compress the ulnar nerve in the region of the cubital tunnel (i.e. the funny bone), causing numbness of the lower palm of the hand. Note: unlike the brachial plexus injury, this excludes the forearm and is limited to the hand only.

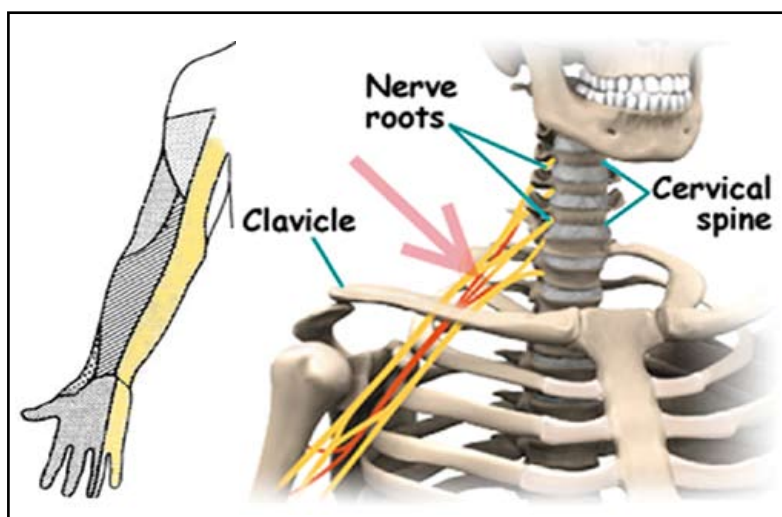


FIGURE 9

Brachial plexus injury ("heavy BC" syndrome)

FIGURE 10
Ulnar nerve
("funnybone" syndrome)

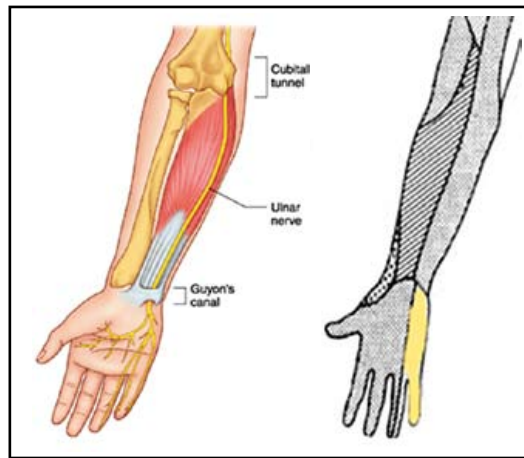


FIGURE 11
Median nerve ("carpal tunnel" syndrome)

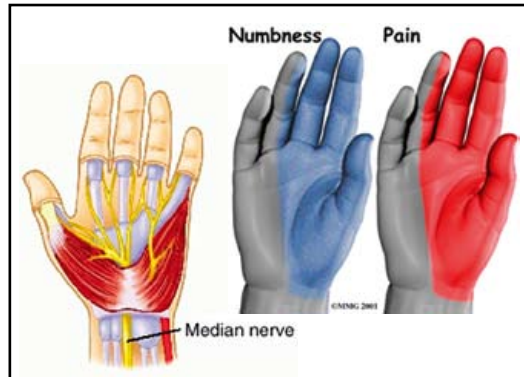


FIGURE 12
Sciatic nerve ("numb bum" syndrome)

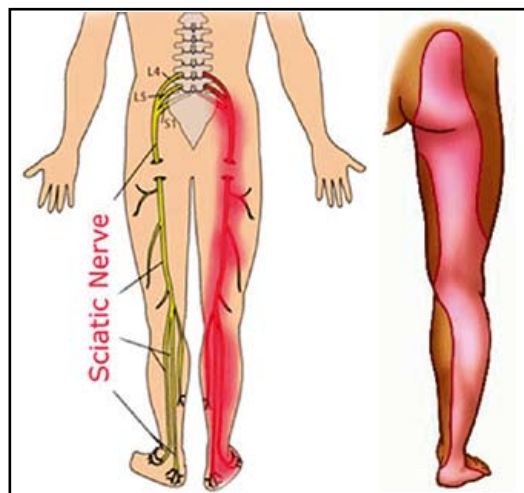
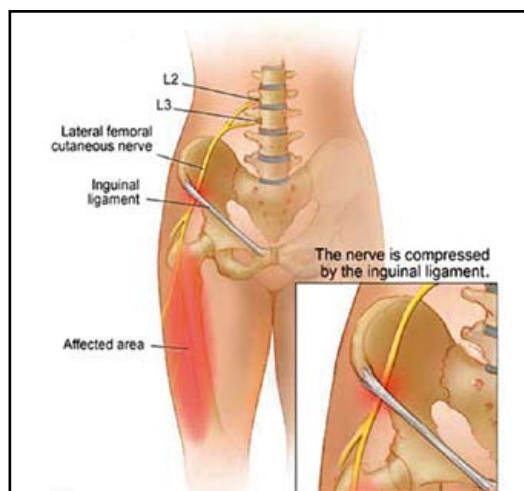


FIGURE 13
Lateral femoral cutaneous nerve
("weightbelt" syndrome)



Median nerve ("carpal tunnel" syndrome)

Median nerve compression may occur due to a tight-fitting wetsuit cuff, gloves or holding onto the boat gunnels during launching.

Sciatic nerve ("numb bum" syndrome)

Pressure on the sciatic nerve due to sitting on a hard surface may cause numbness in a large area of the back of the leg. Boat rides are notorious for this.

Lateral femoral cutaneous nerve ("weightbelt" syndrome)

Obesity and compression by a weight belt can cause an impingement of the lateral femoral cutaneous nerve, resulting in *paraesthesias* of the upper outer thigh.

SUMMARY

- The purpose of this article is only to differentiate the tingles that are not the bends.
- Any injury or illness causing loss of strength, weakness or loss of function, including bowel or bladder function, is always to be considered a medical emergency.
- All *anaesthesia* in an area that lasts more than a minute or two (e.g. due to direct mechanical compression of a nerve due to position or compression by diving gear, etc.) is in need of immediate medical attention.
- *Paraesthesia* or tingling is the result of a partial interruption of sensory nerve conduction between the skin and the sensory cortex.
- Both *paraesthesia* and *anaesthesia* may be the result of damage to the brain, spinal cord or nerves.
- Large areas of numbness – especially if a whole arm or leg is affected and there is associated weakness or paralysis – are very suspicious of brain involvement and constitute a medical emergency.
- *Paraesthesias* or weakness in the distribution of a dermatome indicates probable spinal cord or spinal nerve root involvement. Although this may be due to other causes, such as a prolapsed intervertebral disk (i.e. the cushion of fibrous cartilage between vertebrae), these manifestations require urgent medical assessment.
- If numbness or tingling is limited to a seemingly random patch of skin and does not affect the entire limb or a circumscribed segment, then it is probably due to a peripheral nerve or nerve plexus injury. The most common of these are compression or minor injuries of: (1) lower brachial plexus, (2) ulnar nerve, (3) median nerve, (4) sciatic nerve and (5) lateral femoral cutaneous nerve.

Remember – when in any doubt contact Divers Alert Network for assistance and advice. 

DAN DIVING EMERGENCY HOTLINE

We've Got You

COVERED

- Medical Advice
- Help in Diving Emergencies
- Specialised Diving Physician Referrals
- Access to Evacuation in a Medical Emergency



24 HR EMERGENCY HOTLINE

Toll Free Number in South Africa

0800 020 111

International Number

+27 828 10 60 10

Info

0860 242 242

Website

www.dansa.org

Email

mail@dansa.org





DAN TRAVELLER

By Morné Christou,
DAN Special Projects
and Marketing

South Africa to Zanzibar – Morné Christou tells about his DAN Travels.

“

*We are tied
to the sea
and when
I go diving
it's like I'm
coming home.*

”

Over the past six months, I've travelled to many of the remote areas within the DAN Southern Africa region to take the DAN message directly to divers. One of my trips took me to the Spice Island in the Indian Ocean called Zanzibar. While visiting a dive centre, I was waiting at the restaurant which was adjacent to the centre. I overheard a dive instructor explain to a potential dive client why scuba diving is such an amazing sport and why everybody should experience it at least once in their life. I was impressed with what the instructor said and feel compelled to share this story with you, whether it is true or not, it just hit home!

The instructor said: "The human body is two thirds water just like the earth. Furthermore, the percentage of salt in our blood is the same as that of the ocean. Therefore, we are tied to the sea and when I go diving it's like I'm coming home. It's natural for us to be attracted to scuba diving".

Therein lies the message I've been waiting for for quite some time. There is a definite shift in the mind set of dive professionals nowadays, with the emphasis on appealing to their clients' emotions, eco-awareness and promoting dive

safety. At the end of the day all three go hand-in-hand and I am happy to see that the dive instructors are leaving the one-liners, such as "Do you want to scuba?" or "Let's get wet!", to sell scuba diving to their clients behind.

Before I tell you about all the places I visited and what I did there, the best place to start is at the beginning. DAN wants to ensure that scuba divers are safe, informed divers and it is important to get this message across. What better way to do this than by visiting as many of the DAN Business Members as possible.

DAN Business Members are a group of international dive businesses that are affiliated to DAN and who promote DAN, DAN safety training and DAN products. They are easy to identify – just look out for the DAN flag, DAN promotional materials or DAN safety signs.

The travelling started early in the year when I travelled to the North West, Mpumalanga and Limpopo provinces. There I met with various dive shop owners and independent dive instructors to update them on all that DAN offers dive professionals and dive shops, in an effort to help improve their business and promote safe diving practices. In total, the trip took me a month to complete but it was well worth it as I spent many evenings at different club meeting presenting what DAN offers to divers. I was pleasantly surprised to find out that there are many DAN members in these areas. However, they did not always understand what DAN cover is all about – only that it is a must for all divers. Not to worry, they now know what DAN can do for them.

After my DAN presentations, many divers decided to join DAN and become part of the world's largest dive safety organisation. By joining DAN you help improve dive safety as well because your contribution helps maintain the DAN hotline and when you decide to travel to the coast or any other dive destination, the dive resort you dive with will have peace of mind knowing that you are a DAN member and will be taken care of in case of a dive emergency.

DAN would love to think that all scuba divers want to join the organisation, but we need to be realistic. For this reason, we don't just promote DAN to dive individuals. We offer professional membership packages to dive shops and dive resorts to further promote safe diving practices.

One of the many professional membership packages is the DAN Diving Safety Partners Programme. This is not just an affiliation with DAN but reaches far beyond that in the sense that this programme truly promotes safe diving practices. DAN encourages divers to make a DAN Diving Safety Partner their preferred dive service provider because you the diver will know that their diving staff members are qualified to manage an emergency and stabilise an injured

diver. Furthermore, they have all the necessary emergency plans and numbers in place to successfully control an emergency situation. To top it off, you can rest assured that they are able to provide all of the above, not only because of their training and planning but also due to the fact that they have oxygen available and an appropriate first aid kit. Who are these partners and where can you find them? You can find a full listing of these partners on the DAN website (www.dansa.org) or in the *Alert Diver* magazine on page 29.

To promote the DAN Diving Safety Partners Programme, I travelled to Mozambique next, to the bay of gold: Ponta Do Ouro as well as friendly Inhambane.

As part of promoting the safety programme to the different dive resorts, I offered DAN training to ensure that their staff members have the necessary tools to assist divers in need. Besides the popular DAN Oxygen Course, I also offered the Neurological Assessment for Scuba Diving Injuries Course (NEURO) to the participating dive resorts. (See page 15.)

The NEURO course is a useful safety tool to have in your dive workshop. The assessment will help the diving staff to better understand dive injuries and relay far more accurate information to the DAN hotline. Gone are the days when the hotline receives a call stating "I have an injured diver". Now the hotline will receive calls where people are able to report the injury and give the operator detailed information.

It is comforting to know that more and more Mozambique dive resorts are interested to partner with DAN and join as Diving Safety Partners.

Besides the training done in Mozambique, DAN also provided training to the staff members of Bass Lake and their supporting dive instructors. This formed part of DAN's effort to help Bass Lake maintain safe diving practices and for them to be able to provide up-to-date and skilled help to divers in need of emergency assistance. No DAN training event will be complete without the DAN Oxygen Course, which is a vital part of dive emergency management. However, there is an emerging concern to assist divers in case of cardiac arrest and therefore, we added the very important DAN Automated External Defibrillators (AED) for Scuba Diving Course to the programme. Sudden cardiac arrest is the leading cause of death worldwide. With that said, the staff members at Bass Lake are not only prepared to assist divers in need by providing oxygen when needed but also to assist by using the AED unit that is available on site at Bass Lake.

Up until now, my journey offered a variety of adventures which all somehow lead straight back to DAN. What do I mean? No diver can predict what will happen at any given time and

therefore, it is comforting knowing that, while on a dive trip, you have your DAN membership card in your back pocket or your DAN ID tag attached to your BCD. That is what I mean – DAN is always with you wherever you are. Even though I work for DAN I am proud to say that I have been an active member for the past eight years. That is great, but how will my DAN membership card help me if I have a dive emergency? On the member card you will find all the necessary information needed to help you in an emergency situation and included is the DAN hotline number which you will need to contact.

To further help divers in remote areas, DAN has launched numerous higher-level training courses not yet available to the diving public. These courses are used to train dive professionals in remote areas to assist hyperbaric facilities in order to treat DCI cases.

Welcome to the next level of dive safety training! The Chamber Attendants and Operators Courses were officially launched in Cyprus earlier this year.

I was privileged to be part of this. Even though these courses have been taught in Zanzibar over the past three years, they have now been fine tuned to accommodate just about any hyperbaric facility and their staff. These courses are available to recompression chambers who participate in the DAN Recompression Chamber Assistance Programme (RCAP). This programme has identified chambers worldwide that are suitable to treat DAN members when needed, and also provides advice on how to improve hyperbaric facilities internationally (see page 30). As part of the advice, DAN has identified hyperbaric facilities that need trained staff to assist the dive medical specialist on call.

One of the facilities identified is the hyperbaric facility based in Matemwe, Zanzibar. Dr Luba Matic is the dive medical specialist who now has a team of chamber attendants and operators able to assist him when treating an injured diver in the chamber. Over the past few years, Bertus Brand – an ex SA navy instructor – has trained the students to operate the chamber, this year it was my chance. It was unlike any other course I have taught in the past. It was amazing to see the enthusiasm of the students and their eagerness to learn more about hyperbaric medicine and dive emergencies. With the help of Dr Luba Matic, we managed to do just that!

That brings me to the end of my DAN travels for the moment but I can assure you that there will be many more adventures to share with you in the future. I am off to Mauritius and look forward to telling you about that trip. Safe diving until we meet again. **AD**



“
No diver can predict what will happen at any given time and therefore, it is comforting knowing that, while on a dive trip, DAN is always with you wherever you are.
”





Partners in PARADISE

*By Morné Christou,
DAN Marketing and
Special Projects*

As scuba diving's popularity increases, divers flock to remote and exotic dive destinations. Morné Christou delves into the benefits of being a DAN Safety Partner in paradise...

DAN is committed to dive safety.

Although DAN is active worldwide, DAN-SA focuses its efforts in Southern Africa and we have been servicing this area for 12 years. Since 1983, DAN has been recognised as one of the world's pioneering non-profit dive medical organisations that aims to improve the safety of scuba diving through education and training. We provide a service to all divers but our members receive benefits beyond that of the average diver.

Today we have more than 300 affiliated DAN dive shops and centres throughout Southern Africa. Our passion for the earth's oceans and dive medicine has taken us to many of the Indian Ocean islands and some very remote parts of mainland Africa, where we have 28 DAN Diving Safety Partners. We are constantly continuing our journey to promote dive safety in remote areas of Southern Africa.

Our dedication to supporting remote dive locations and their divers is evident in everything we do. Each day, DAN diving specialists are on call for our DAN members and, as a result,

we are able to make meaningful differences to these divers and dive businesses.

As the sport grows and divers flock to dive resorts, so the peace and tranquility of remote dive destinations becomes an irresistible magnet. With the growing number of divers in



these remote locations, it is crucial to ensure adequate safety procedures to minimise the risk of dive accidents. By choosing to dive with a DAN Diving Safety Partner, it is possible to have a dive journey of a lifetime and peace

of mind knowing that the dive resort and its staff members are trained to: manage a dive emergency, implement a recognised emergency assistance plan and provide basic dive medical care. We have expanded this partner programme across European and Northern African countries and our model of safety participation has become an industry benchmark.

Across our affiliated DAN dive shops, resorts and lodges, throughout our nearly 9 000 DAN members, runs one common thread – a passion for diving and making the sport as safe as possible! Our members, affiliated dive shops and resorts speak many different tongues, but when it comes to dive safety we share the same heartbeat. We are often asked how this is possible in a region that is so vast. The answer is quite simple – we all share the same purpose: to ensure that each dive you make is safe and enjoyable. DAN Diving Safety Partners are renowned for having some of the most highly-trained professional and safety-orientated dive guides in the world. They passionately impart an incomparable wealth of knowledge (personally researched and experienced) about reefs, ecology, ocean life, remote safety procedures and emergency management. This provides their guests with memorable oceanic experiences that will last a life time.

With parts of the African continent such as Sodwana Bay, Aliwal Shoal, Simon's Town, Lake Malawi, Ponta Do Ouro, Inhambane, the Spice Island of Zanzibar, the exquisite Bazaruto Archipelago off Mozambique, the Seychelles and Mauritius further to the east (and various islands scattered throughout the Indian Ocean) – Africa surely has some of the most beautiful dive destinations in the world.

But how do dive resorts survive the global recession that has had a devastating impact on their businesses? They need to take a fresh perspective in these tough times and look for new opportunities to attract divers and continue their service to existing clients.

To answer the question, a rapid response to the economic down turn with simple, but effective solutions is required. Dive shops and resorts that have survived previous challenges will survive: changing your product or course mix or adding a new service and coming up with innovative ways to reduce cost or attract new business form part of these strategies. Dive companies that understand market shifts will reap the rewards immediately and in the future.


What does this all mean? Divers expect more for their hard-earned money and demand more value, more service and more attention. In response, savvy dive companies spend responsibly, putting their money into areas that improve their sales and enhance customer

service. Dive companies that stay current with the evolving dive market and invest in customer relationship management solutions in order to better understand and serve their customers, will capture greater market share now and have a competitive advantage when the economy bounces back.

The solution that DAN offers dive companies is the Diving Safety Partners Programme. By becoming a DAN Diving Safety Partner, dive companies will stand out in the crowd knowing that they offer something more than just good service. Diving Safety Partners offer a superior dive service through dedicated dive safety practices, staff that have up-to-date safety training and revised emergency plans to assist and manage divers in need when things go wrong. DAN Diving Safety Partners have a marketing advantage over their competitors in more than one way. Having up-to-date first aid, CPR and oxygen-trained staff at their disposal is surely attractive to divers. That is not all – knowing that they have working oxygen units and first aid kits available to assist injured divers shows that they care about their divers. Furthermore, they are able to respond quickly and professionally in case of a lost diver situation because they have taken the time to set up an emergency assistance plan which is also available to their clients. This means that any diver can initiate their emergency plan when needed because it is displayed in an area for every diver to see. The DAN Diving Safety Partners Programme has taken safety training and planning procedures to the next level. This helps dive companies become attractive to international divers who in turn help them sustain their business. Together, DAN and Dive Safety Partner companies are building a safer and more attractive dive industry and we invite more dive companies to join us, not only to improve diving safety but also to make southern Africa the best diving destination in the world.

Partnering is a two-way relationship. DAN wants to make sure that every diver understands what it means to become a Diving Safety Partner. DAN recognises and rewards dive companies that consider dive safety a priority by committing to:

- Effective dive safety briefings;
- Dive leader and skipper safety training;
- Emergency management plans; and
- Lost diver prevention and management plans.

If you are planning your next dive holiday, choose to dive with a DAN Diving Safety Partner. If you have a dive company and want to have an edge on the competition, then it is time to consider joining as a DAN Diving Safety Partner. For more information please contact the DAN Office 0860 242 242 or log onto the website www.dansa.org 

REGISTERED DSPs

SOUTH AFRICA

- Adventure Mania – Sodwana Bay
- Aliwal Dive Centre – Umkomaas
- Amoray Diving – Sodwana Bay
- Blue Vision Dive Centre – Umkomaas
- Calypso Dive & Adventure Centre – Ushaka Marine World Durban
- Coral Divers – Sodwana Bay
- Oceans Alive Diving – Umkomaas
- Sea Escapes – Sodwana Bay
- Sodwana Bay Lodge – Sodwana Bay
- Triton Dive Charters – Sodwana Bay
- Underwater Explorers – Cape Town

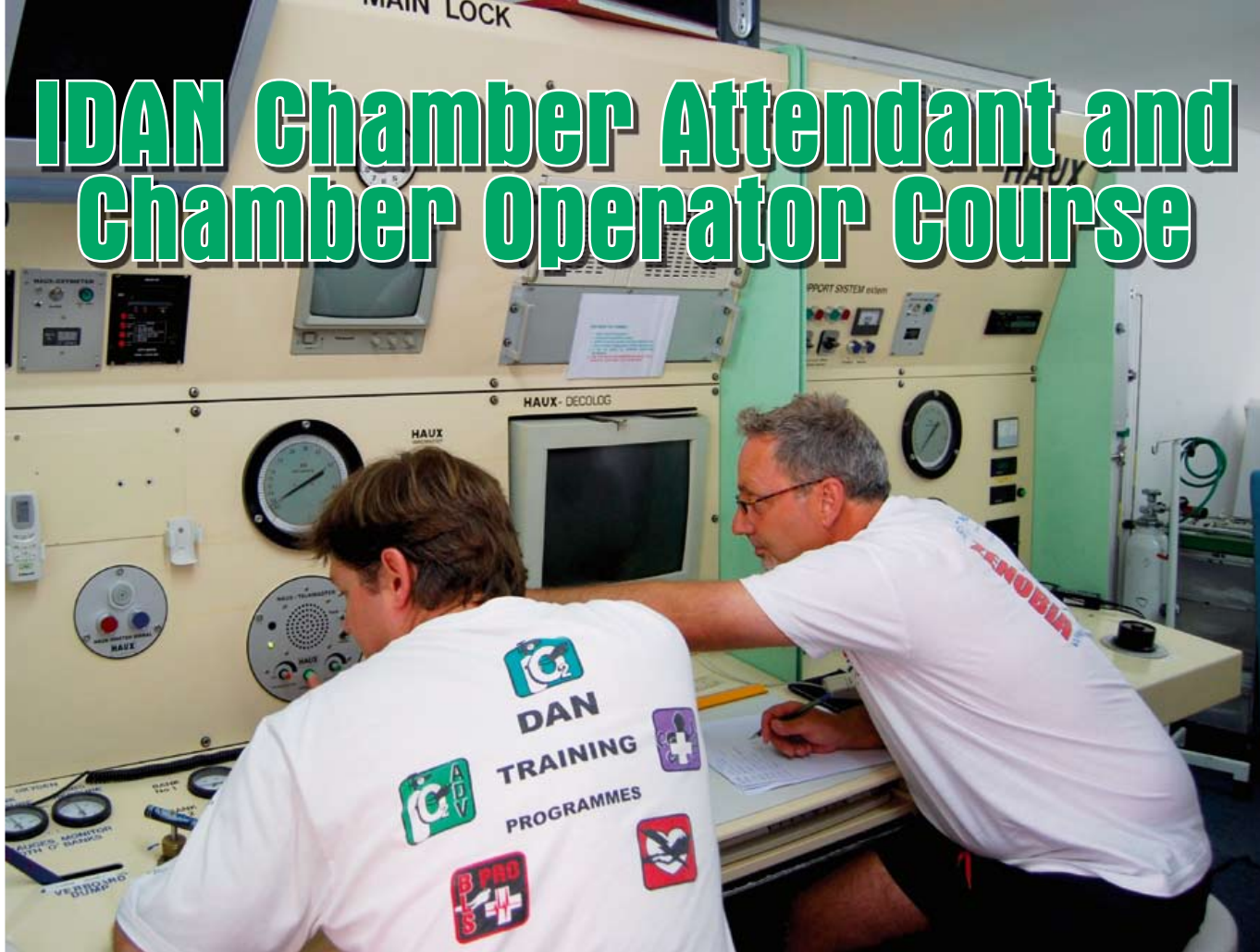
MOZAMBIQUE

- Barra Lodge
- Centro de Mergulho – Coconut Bay
- Jeff's Palm Resort
- Malongane Watersports

TANZANIA (INCL. ZANZIBAR)

- Bahari Divers Dive 710 - Pemba Island
- East Africa Diving
- Karafuu Dive Centre
- One Ocean The Zanzibar Dive Centre
- Zanzibar Watersports
- Mnemba Island Lodge
- Peponi Diving
- Scuba Libre

IDAN Chamber Attendant and Chamber Operator Course



By Guy Thomas,
Director of Training
and Operations,
DAN Europe

**Guy Thomas
tells how DAN
has developed
the CHATT and
CHOPS courses,
thereby adding
extra safety
to the sport of
diving.**

Several years ago, DAN Europe launched the Recompression Chamber Assistance and Partnership Programme (RCAPP) in the DAN Europe region. This initiative has several goals, including building partnerships with recompression facilities, improving facility standards, providing guidance and technical assistance and ultimately reducing all possible risks at these facilities.

In the event of a diving accident, we want to make sure that DAN members get effective and safe treatments at these chambers.

A team of DAN experts therefore visits selected or volunteering hyperbaric facilities in remote diving locations to perform on-site risk assessments. After the visits, the facilities receive a detailed report with valuable information on how to render their operations safer, how to prioritise their issues, as well as guidance on both technical and operational matters.

One of the things we've noticed when busy on RCAPP trips, is that hyperbaric chambers in these remote locations are not used frequently. However, their presence is extremely important in order to guarantee that divers have access to a chamber in an emergency situation. For the benefit of divers, it is vitally important to make sure these chambers remain operational, while working in a safe way.

While it is obviously good news that chambers are not used frequently – meaning that we are not seeing a lot of accidents – it also means that it is hard for those who work at these facilities to keep their skills and competencies up to date. We have also observed that staff at remote chambers are usually local dive instructors, who are called up to operate the chamber or act as chamber attendants in case of need. This makes a great deal of sense, as the chamber can guarantee that there will always be an operator or attendant available. Many chambers do not have a 24/7 fixed, paid staff complement, however, as the cost would simply be too high. And even with fixed staff complements, it is not uncommon to have high staff turnovers.

Irrespective of the numbers and availability of staff for operating and tending duties, every person working inside or outside the chamber must be trained and re-trained regularly. In most facilities, staff training is performed by the doctor, who is also there for a limited period of time only. One of the unique problems in these situations is that the training of the operators is not “uniform”; it depends on the doctor who is there at that time. Often, this doctor has not had the time to study the chamber in detail, including the position of valves, piping, compressors, gas

supplies and safety equipment. These items are usually different, or at least located in different places for each chamber.

Although it might appear odd, we even noticed that there are usually no specific user manuals, or that those present are not always used as a reference, as the chamber itself does not resemble the chamber described in the manuals!

What is needed in this case is a manual that is made for the actual chamber, together with a training programme that would make sure every staff member is trained and re-trained in the same way for the chamber that they are using. This system did not exist... that is, until DAN decided that in order to give extra support to chambers and guarantee the safety of divers, such a course should be available.

THE CHAMBER ATTENDANT AND CHAMBER OPERATOR COURSE (CHATT & CHOPS COURSE)

The ChAtt (Chamber Attendant) Course is a three day course during which participants are taught how to perform the functions of the inside tender assisting an injured diver in the best way possible during treatment.

The attendant needs to make sure that there are no safety hazards in the chamber during treatment and needs to work closely together with the chamber operator or "driver of the chamber". This primarily includes performing essential functions on the inside of the chamber during emergencies (be these medical or technical situations).

The ChOps (Chamber Operator) Course is a five day course and trains participants to operate or "drive" a hyperbaric chamber. Participants are taught sufficient theory so as to understand how chambers work and how a hyperbaric facility should be set up technically. This is then followed by hands-on instruction and practical skills on how to operate chambers in a safe way and how to react quickly, effectively and appropriately in an emergency.

In order to be truly competent and to make sure safety drills become a standard way of working, the operator needs to be trained on the actual chamber they will use. While the theory might always be the same, the practical part of the course varies according to the actual chamber being used. Some chambers have, for example, a deluge system (fire suppression system), while others are only fitted with a hand-held extinguisher. Training must be customised to the actual chamber, and this is what ChAtt and ChOps does.

HOW DOES THIS WORK?

DAN has compiled a general operations manual that contains all the possible information that could be useful for every chamber. This manual is a working document for the course instructor,

who customises it into a specific manual for the actual chamber used during the course.

The instructor arrives at the course destination, or hyperbaric facility, a few days before the course and sets about taking specific and detailed pictures of the chamber. These are then integrated into the manual and the slide presentations that will be used during the course. This allows actual equipment to be illustrated rather than general examples.

The instructor will also delete irrelevant material. So, for example, where a deluge system is not available on that chamber, any references to deluge systems are removed, leaving only those parts referring to hand-held extinguishers.

The final result is an electronic student manual which can be printed and given to each course participant. Participants then have a manual specific to their chamber. This makes the learning process easier and less confusing.

HOW IS THE COURSE ORGANISED?

The course is taught to the staff of a specific facility, organised around their actual chamber. It is divided into separate modules, making it possible to follow classroom instruction with hands-on training.

Whatever the students learn during a theory session, they need to practise to make sure that they fully understand the implications. This is done immediately following each specific session. Once students have completed the practical part, they return to the classroom for the next module. If the module is to cover piping and valves, the practical session will include tracing the actual piping and identifying valves fitted, so as to learn the facility inside out. If they cover pressurising a chamber, they will then actually pressurise the chamber.

The course is structured in such a way that every participant first gets trained as a chamber attendant before they can progress to the Chamber Operator Course. This is done to make sure that participants understand that whatever the operator does on the outside has an immediate effect on the attendant and patient on the inside. Although it is possible to train a person as an attendant only, it is not possible (nor advisable) to train a person as an operator only.

At the end of the course, participants are certified as operators and/or attendants for their chamber. The manual and slides (electronic format) will stay with the chamber and the safety director can then use these to train new staff, re-train existing staff or repeat safety drills on a regular basis.

What DAN does by running these courses is not only creating a stronger relationship between DAN and the hyperbaric facilities, but also making sure that divers (our members)

During the Attendant Course, students will learn about:

- Pre- and post-dive procedures
- The use of built-in breathing systems
- Fire drills
- Oxygen toxicity during treatment
- Chamber atmosphere contamination
- Over-pressurisation and loss of pressure
- Medical emergencies
- Chamber hygiene
- Pre-dive orientation
- Tending to an injured person
- Treatment gas and air breaks
- Problems during the ascent
- Co-ordination with the diving doctor

During the Operator Course, participants learn about:

- Types of decompression chambers
- Duties and responsibilities
- Main components and their functions: gas in, gas out, lightning, electrical supply, fire suppression, communications, environmental control, emergency procedures and safety devices
- Chamber operating procedures (including pre-dive checks)
- Providing the chamber treatment (diving tables)
- Venting the chamber (reduction of temperature, oxygen or CO₂ levels in the chamber)
- Lock-in and Lock-out procedures
- Surfacing the chamber
- Post-dive procedures and checks
- Possible problems during treatment
- Emergency operating procedures
- Chamber fires and explosions
- Oxygen handling
- Hyperbaric oxygen therapy
- Co-ordination with the diving doctor



receive the most effective treatment, should they need it, at one of these facilities which are located all over the world. All of this while assuring the well-being of the divers and their safety during treatments.

The first Chamber Attendant and Chamber Operator Course in the DAN Europe region took place at the Oxygen Centre in Limassol, Cyprus, from 1 to 8 June 2009.

The group of participants comprised of three experienced hyperbaric chamber operators, two DAN Europe and DAN Southern Africa staff members and two new chamber operators. The course instructor, Bertus Brand from South Africa, made sure that everybody received sufficient hands-on training and that they felt fully confident by the end of the course.

This particular course was not only done to certify the new operators, but also to ensure that we now have some European instructors who are available to go and teach the course at other locations. **AD**

“

What DAN does by running these courses is not only creating a stronger relationship between DAN and the hyperbaric facilities, but also making sure that divers (our members) receive the most effective treatment, should they need it.

”

WHAT DID STUDENTS THINK OF THE COURSE?

The reactions of the participants were extremely positive, showing immense value and importance of the course.

Here are some of their comments:

“Attending a Chamber Operator Course with some of the most experienced people in this field could only make for a great course. The background knowledge and hands-on approach were balanced in such a way that by the end of the course I felt very comfortable operating my particular chamber.”

Chris Demetriou, dive centre manager and DAN instructor trainer

“The course was intense, but very enjoyable. Even experienced tenders and chamber operators like myself can still learn a lot of new things on these programmes. I am convinced that these two courses will be of immense benefit to staff and volunteers of hyperbaric chambers all over the world. They, together with the DAN chamber risk assessment guide, show that DAN truly cares about the safety of divers worldwide.”

Harry Barthel, hyperbaric technician and DAN instructor trainer

“Suffice to say that the course was of immense benefit and one that will most surely benefit dive centres and chambers worldwide. It really is a partnership with you guys and for that I thank you on behalf of all of the diving community but mostly from our side as we have done nothing but benefit since linking up with DAN!”

Clive Martin, owner of Dive Inn dive centre and the Oxygen Centre

“I was quite nervous as we started the programme as chamber tenders and operators, as I had no idea of what was coming towards me during the next seven days. The way the programme is structured and the way it was presented quickly took any apprehension away from me, and I started to thoroughly enjoy the course. During the programme I met a lot of very capable people and going through the course step by step, envisaging every aspect of a recompression chamber, has given me the knowledge and the confidence to be a good chamber tender and operator. Fantastic course!! Thanks a lot.”

Jurg Dahler, director Fineglobe and DAN instructor trainer

“This new venture is an International DAN (IDAN) project. All IDAN offices worked together and will start offering these courses without charge to their local RCAPP partners. This makes it a programme with a global impact on dive safety. Because divers travel a lot and dive in “remote” locations and accidents can happen anywhere, it is important to ensure the availability of effective and safe recompression chambers in any of these locations. Those who will benefit from it in the end are the divers themselves, who in case of need might get treated in one of these chambers. DAN looks after the diver’s safety in many ways. This is one of them!”

Guy Thomas, director of training and operations, DAN Europe



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The latest member of the Galileo family offers a complete solution for demanding divers, including hoseless gas integration, full-tilt digital compass, 3 display modes in extra-large dot matrix format (giving actual written messages and alarms instead of just flashing icons).

As with all Uwatec computers, Galileo Luna comes standard with an infrared interface and free software so you can download dives, upload messages and pictures and even access computer firmware upgrades such as the new Apnea free dive mode, Predictive Multi-Gas and Heart Rate Monitor options.

For the technical divers, Luna boasts a 330m depth rating and is oil-filled for flood-proof operation at any depth. Technical diving firmware upgrades will also be available for download in the near future.

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ZANZIBAR:

Trains Chamber Attendant and Operator Staff

By Dr Luba Matic,
BScMedSchHons UWM, Diving Emergency Consultant. UC E and C.



Another hyperbaric chamber training course has been successfully conducted in Zanzibar. DAN Southern Africa, in conjunction with International Medical Centre Zanzibar, regularly trains professional divers in hyperbaric chamber operation and inside chamber injured diver attendance. This year we trained five new chamber attendants and three new operators.

All candidates were trained by DAN-SA representative Morné Christou, whose vast experience in the diving and hyperbaric field, together with his great teaching style, made this course a truly enriching experience. Not only did candidates master the complex set of skills when it comes to hyperbaric chamber operation, they also had an opportunity to expand their understanding of diving physics and physiology. Being involved with real diving emergencies for many years myself, I was delighted that the new class of chamber operators and attendants was given truly relevant lessons with realistic emergency scenarios and powerful drills, emphasising understanding of underlying principles rather than just blindly following rules. Somewhat anxious during the first few chamber dives, the candidates were getting more and more relaxed as the course progressed and their skills and knowledge grew. Drills such as chamber fire suppression and dry dives to 30 m were conducted with ease and a lot of good laughs.

Although every effort should be made to prevent decompression illness from happening in the first place, no compressed gas diving can be considered safe without continuous access to a hyperbaric chamber. The Zanzibar diving community is fortunate to have a fully functional hyperbaric chamber throughout the year. The logistics behind that service are by no means simple. The presence of trained chamber operators and attendants in the diving community are among the necessary conditions for sustaining this essential service. We are once again very grateful to DAN-SA for providing this great training opportunity that makes Zanzibar a much safer place to dive. **AD**



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Your Preferred Dive Centre in Zanzibar

Dive Centres Supporting the Dive Medical Unit

- The Zanzibar Dive Centre One Ocean
- Zanzibar Watersports
- Bahari Divers
- Mnemba Island
- Scuba Libre
- East African Divers
- Fundu Lagoon
- Scuba Do
- Buccaneer Diving
- Blue Diving
- Easy Blue Divers

**Their efforts help provide professional
dive medical assistance in Zanzibar**

DAN International HOTLINE No.

+27 828 10 60 10

**IMC Zanzibar Dive Medical Unit
HOTLINE No.**

+255 773 904 230





DAN partners with technical divers

By Dr Jack Meintjes
and Dawn Carver

Many deep and technical dives are carried out successfully without major problems. However, one cannot ignore the dangers associated with this type of diving. Dr Jack Meintjes and Dawn Carver tell more about DAN's involvement in technical diving.

As you know, technical diving is ... well... *technical*.

Besides meticulous planning of the dive itself, a plan to manage any emergency situation is also required. All divers and other support personnel involved (including DAN) need to be aware of the plans and be familiar with their roles in an emergency situation.

Many deep and technical dives are carried out successfully without major problems. However, one cannot ignore the dangers associated with this type of diving. Consideration needs to be given to the risks involved and how to avoid them or rectify the problem and treat any diver that suffers an incident.

When a technical diver suffers decompression sickness (DCS), it is generally more severe and has a higher risk for permanent disability than DCS resulting from other forms of recreational diving. In line with the HIRA programme being introduced recently, DAN is actively partnering with the recreational divers we support.

The DAN membership benefits provided under the Master Plan covers its members to a

maximum depth of 100 m. Any DAN member who plans dives deeper than 100 m is required to involve DAN in the planning of the dive before benefits can be extended to them (this is a requirement from the underwriters of the DAN insurance policy and is a restriction on what DAN is allowed to provide). However, DAN wants to encourage trimix divers to plan with the involvement of DAN.

So how does it work in practice? When planning a dive, one usually includes the plans for emergency situations. Most divers know that a part of the emergency plan is for everyone to know the DAN hotline number. If the hotline is prepared for such a call, we are able to respond more promptly and effectively.

During the planning phase, the hotline provides you with details of evacuation and treatment options available in the area you will be in, and what the limitations are in the event of an evacuation. This varies and is dependent on a number of factors. Not every location is helicopter friendly or accessible by aircraft. For instance, if you are diving in Mozambique, we cannot mobilise the helicopter after 14h00, as

they are not able to land in the dark. DAN would thus advise that the dives are planned for early in the morning, so that you are not required to wait the whole night for an evacuation the next morning.

Access to emergency services is limited in many remote locations. It may thus be necessary to consider alternative evacuation options (using private vehicles), which may be faster than waiting for evacuation support from a distance.

Standard questions you can expect from DAN with regards to your emergency plan are:

DIVER INFORMATION

1. How many divers in the group and each one's function.
2. Full names and ID numbers of all group members.
3. Medical aid memberships and numbers.
4. DAN-SA membership numbers.
5. Contact number of a friend or family member you would like to be notified in case of an emergency.
6. Whether the divers had a diving medical exam recently and whether they were declared fit to dive.
7. Whether there is any medical concerns we should be aware of.

DIVE INFORMATION

1. Place, date and time (day/night).
2. The purpose of the dive (pleasure/cave/depth/recreation).
3. Whether buddy-diving is planned or not.

DIVING EQUIPMENT

1. What primary equipment will be used (open circuit, rebreathers, etc.).
2. Back-up (carried by divers and/or suspended in the water).
3. Whether the equipment is "in date" (routine checks, visual, hydro, etc.).

EMERGENCY PLAN

1. Diver audit and recall (how will you know that all divers that entered the water will exit?).
2. Hazard identification and risk assessment (which hazards do you anticipate and how do you plan to address each hazard?).
3. The plan to rescue an unconscious diver at the bottom (as an example of a worst-case scenario).
4. Medical equipment on site (oxygen, delivery systems, how long will the oxygen last, first aid equipment).
5. Personnel medical competencies on site (especially: first aid or medical qualification and the ability to perform neurological assessments).
6. Emergency transportation options that you have available, and how this links with DAN (DAN also provides input here).

7. Communications and emergency numbers, whether you have access to a phone to call the DAN hotline (cell phone, international roaming, land-line, radio, etc.).
 8. Nearest medical facility: general practitioners, casualty, hospital, etc.
 9. Nearest appropriate recompression facility.
- There is obviously no perfect answer. The purpose is really for the hotline to be prepared to assist you as soon as the emergency arises. You can email your dive notifications and safety plans to medical@dansa.org

WHAT DOES DAN DO WITH THE INFORMATION?

The information is used to plan our support for your specific operation. We also provide you with input from the hotline, especially if we see gaps in the "chain of survival". In some instances, our partners have altered their dive plans, for instance where no provision was made for missed decompression stops or plans to locate missing divers. In other instances DAN has ensured that additional support is available, e.g. DAN requests heliox gas from a commercial dive company to be transported to the chamber closest to where the dive was taking place, so that the option for deep recompression therapy is available.

Our aim is to ensure that the safety plan incorporates the most foreseeable emergencies, ultimately preventing emergency situations from occurring. Secondly, we can ensure that the injured diver receives the best emergency and first aid support, providing the best chance of recovery. When one realises that it often takes the helicopter or aircraft a few hours to arrive on site in a remote location, it is absolutely necessary that you are able to provide emergency support until DAN is able to reach you with professional care.

Thank you to those who have already partnered with DAN. **AD**

“
Besides
meticulous
planning of
the dive itself,
a plan to
manage an
emergency
situation is
also required.

”





Safer Diving with DSP and HIRA Training



By Dr Jack Meintjes

“

To ensure our members have an incident-free diving holiday, we have started to partner with a number of diving operators and other persons providing services to divers.

”

The new Diving Safety Partner (DSP) and Hazard Identification and Risk Assessment Programme is sure to change the way we look at safety in recreational diving. The need for this programme was identified following an analysis of the calls received by the hotline, indicating that many of the diving-related accidents and injuries our members suffer are not related to pressure at all, but rather due to general safety issues. These result in other injuries that are far more common than decompression illness. This includes: hand injuries, cuts, bruises, boating accidents, lost divers and many more. To ensure our members have an incident-free diving holiday, we have started to partner with a number of diving operators and other persons providing services to divers to help make their operations safer. In this way, DAN can provide support to operators who have already shown a commitment to making their operations safe. This programme is our DSP Programme and will be provided at three different levels in future.

DAN believes that the minimum safety requirements for any diving project are the following:

- They must have a realistic rescue plan in place for any diver that is injured, including the ability to rescue an unconscious person from the water.

- The ability to provide basic life support (airway, breathing and circulation) and first aid for injuries sustained.
- Enough oxygen to manage any diving injury until medical support arrives.
- The ability to contact the DAN hotline for additional advice and support.
- The ability to perform a basic neurological examination (providing essential information for the DAN doctor handling the case).
- A feasible emergency assistance plan, including transport options to the closest medical facility.
- Having procedures in place to locate lost divers (“lost diver procedures”).

All divers (not only DAN members) should expect at least these seven safety requirements from any operator they choose to dive with. Apart from having these in place on paper, the emergency procedures should be practised on a regular basis. We have found that this highlights areas of concern that could be improved.

To partner with DAN at this level, the provider needs to complete a self-report, stating that the minimum requirements are met and also indicating which resources are available on site. DAN is then able to partner with such an operation, providing a better service to

our members, because we have a better knowledge of the resources we are able to mobilise in case of an incident.

A second level of DAN partnership is where the facility not only meets these minimum requirements, but the people are also involved in the safety training of others, which means that they have a training facility and provide training courses on oxygen, first aid, basic life support, automatic external defibrillators and neurological examinations. This is again evaluated by means of a self-report.

The highest level of partnership attainable is where DAN is invited by an operator to send a team of experts to help with the development of safety systems and the identification of critical safety control points. This is called the Hazard Identification and Risk Assessment (HIRA) Programme and is based on well-known principles in health and safety applied in many workplaces. Each such safety partner is then provided with a full safety report, indicating the areas where they are successfully addressing hazards while providing the operator with guidance on aspects where further improvement is needed. The facility is required to measure their safety performance by literally counting the number of incidents each year, then analysing the information and showing continual improvement in their safety record.

DAN truly believes these safety partners will be the safest operators you can dive with as they are committed to safe operations. They have safety systems and plans in place and are able to manage all types of emergencies. An injured member can be assured of the best care until the road or air ambulance arrives for the emergency evacuation.

The first trial of this programme was recently conducted at the Dive-In operations in Cyprus. The programme was well-received by the Dive-In personnel and it was clear from the beginning that they are committed to safe operations. Most of the procedures and systems we believe should be in place were already implemented by this operation and we can accurately report that the Dive-In operation is considered one of the safest in the world. The assessment was performed by two medical specialists in occupational medicine and one engineer. The rest of the team consisted of commercial instructors in chamber operation and safety. We would encourage all our members to consider diving with operators who have shown their commitment to diving safety.

Common causes for diving injuries that are not related to pressure need to be considered by all divers and operators and should be addressed in a systematic way to ensure that divers are not injured. Examples of these include the following:

- Slippery surfaces leading to slips and falls.
- Injuries during the launch and recovery of the diving vessel.
- Hand injuries from ladders (on dive boats).
- Inappropriate entry and exit points for the dive.
- Improper emergency planning and availability of first aid equipment.
- Prevention of food poisoning.
- Taking malaria precautions and prophylaxis.
- Lack of emergency-procedure training and verification of competency.
- Sunscreen and protection of dive operator staff against sunburn (while they wait for the divers on the boat).

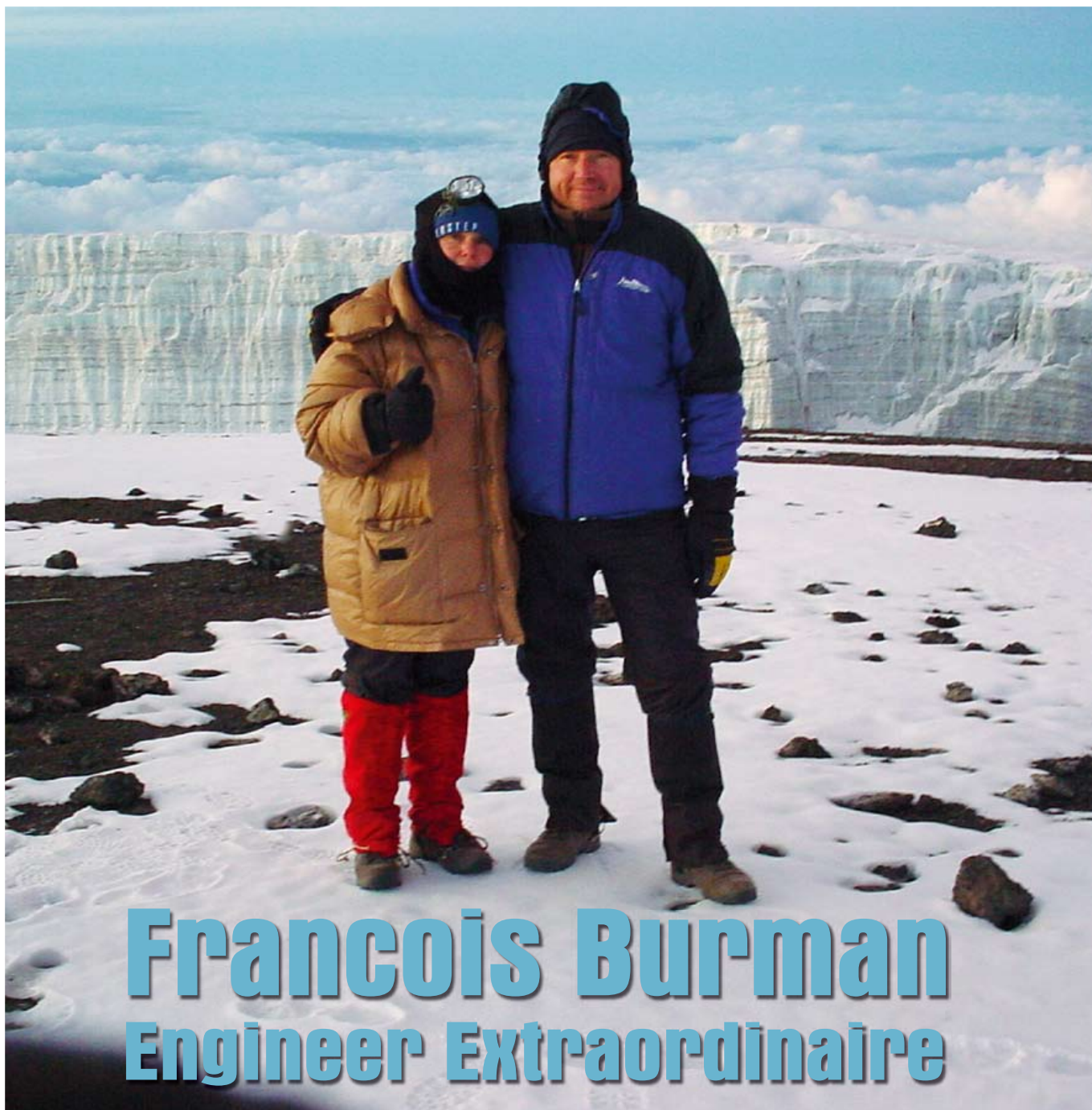
The answer to these common problems is to measure all incidents and to identify ways in which they can be prevented. Any incident (leading to a near-miss, loss of equipment or minor injury) should be noted and discussed by the dive operator personnel and procedures must be put in place to monitor progress made. These partners of DAN will ensure that there is a continuous improvement cycle to make your diving safer. **A D**

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The first trial of this programme was recently conducted at the Dive-In operations in Cyprus.





Francois Burman

Engineer Extraordinaire

By Dr Frans J Cronjé

Francois Burman is the chief operating officer and financial director of DAN Southern Africa. More than placing DAN Southern Africa on a sound operational and financial footing since joining DAN Southern Africa in 1998, Francois has also had great impact on DAN internationally. Delve into the foundations that make an engineer, extraordinary!

As a mechanical engineer with a pressure vessel manufacture and a nuclear engineering background, Francois quickly gravitated towards hyperbaric facility safety. During the first International DAN meeting in South Africa in 1999, Francois was commissioned to develop a list of minimum requirements for recompression facilities. This led to the *DAN International Risk Assessment Guide* in 2000 that is still in use around the world today. The *Risk Assessment Guide* is now in its third revision in English, second revision in Spanish and first edition in Portuguese.

Francois' experience in the technical and safety aspects of clinical hyperbaric medicine allowed him to expand his work towards both monoplace (i.e. one person) and multiplace (i.e. more than one person in the chamber) operations. The work was published by International ATMO in San Antonio where he serves as a permanent member of the faculty on their Hyperbaric Safety Director's Course. Francois' work also formed the backbone of the South African Bureau of Standards document SANS 10377-1 for clinical hyperbaric facilities, which was published in 2002.

These achievements were recognised by the Undersea and Hyperbaric Medical Association when he was given a Special Recognition Award in 2001 in San Antonio.

In 2001, Francois started a series of multi-continental visits to recompression facilities. Since his first visit in 2001 to facilities in Thailand, Francois has now (as of 2009) personally visited, inspected and reported on 92 recompression chambers around the world (see pages 43 and 44).

His passion for remote recompression facilities led to an invitation to participate in the Recompression Chamber Assistance Programme under the auspices of DAN America in 2002. This programme, supported entirely by donations, assists remote recompression facilities to obtain essential advice, equipment and training to offer sound and safe treatment for injuries to scuba divers. DAN Europe followed suit in 2004 by asking Francois to develop their RCAP programme. These programmes have since expanded to become the Recompression Chamber Assistance and Partnering Programme (RCAPP) in which Francois continues to play a pivotal role (see page 42). The expanded programme builds on the foundations of RCAP, but – in addition to on-site risk assessment – includes mentoring and counselling of recompression facilities to assist them to comply with minimum safety standards, and also helps to foster an interactive and interdependent relationship with DAN.

This has been of great value in establishing sound service provider agreements between DAN and the respective recompression facilities and even resolving issues between competing recompression chambers. Francois' unique ability of establishing constructive dialogue and his pragmatic, collaborative and inclusive way of solving problems has earned him respect, trust and friendship with recompression facilities around the world.

An important and strategic extension of the RCAPP programme has been the initiative to establish a recompression facility in Zanzibar. Initially under the auspices of DAN, the endeavour was engineered in such a way that it is now owned and supported by a local diving doctor and supported entirely by the local diving population and the proceeds of its clinical activities. This has proven to be an ideal model in overcoming the usual technical and financial boundaries to the installation of recompression facilities in strategic locations.

Francois' current activities in this area include: ongoing chamber evaluations, issuing of certificates of compliance to those chambers that meet the DAN minimum safety requirements, education, maintenance, training, technical advice, problem solving and assistance with changes, procurement of replacement equipment and even acquiring of new facilities. Working with DAN America, DAN Europe and of course DAN Southern Africa, Francois continues to empower recompression facilities to increase their relevance within their diving communities, to manage their facilities more effectively, to ensure that the facilities are maintained properly and ultimately, to be able to offer effective care to divers in the safest way possible.

To further expand the capabilities of DAN to meet the growing needs of recompression facilities around the world, Francois has participated in a number of training and development initiatives including:

- Co-presenting on DAN America RCAP workshops in Durham and Miami where the remote chamber operators were invited to attend lectures on topics relevant to them.
- Co-presenting a DAN Europe RCAP workshop in London in 2007.
- Co-presenting a safety workshop at the Australian HTNA under the DAN AP banner at the Gold Coast meeting in 2008 with specific emphasis on safety issues related to acrylics.
- Co-presenting an advanced safety workshop each year in Brazil for the developing diving and hyperbaric medical industry. This is funded by the Brazilian chapter of the UHMS but also flies the DAN RCAP banner.

Upon asking Francois to share some of his most interesting experiences with chambers, he shared the following pictures to tell the story...



The first remote chamber: Thailand's Koh Samui chamber.



The most unusual: chambers are not always on land!



The most remote chamber: Galapagos Islands.



The chamber in the worst condition.



The busiest chamber – A legend in the Red Sea around Sharm el Sheik.



The local chamber at Zanzibar run by Dr Luba Matic of International Medical Centre.



Sometimes access is not conventional.



And sometimes divers can expect 5-star treatment.

Apart from his role on the faculty of International ATMO's Hyperbaric Safety Director's Course, Francois has helped to establish the DAN RCAP scholarship, whereby DAN Europe and DAN America sponsor suitable candidates to attend this highly valuable and empowering four day course in San Antonio.

Indeed, Francois has truly seen it all! And on behalf of DAN Southern Africa, International DAN and the recompression facilities who have all benefited from his commitment, enthusiasm and expertise, we wish to recognise Francois Burman – engineer extraordinaire! **AD**

RCAPP Programme and Progression of Participation and Involvement.

RCAPP

Recompression Chamber Assistance and Partnership Programme

MISSION STATEMENT

To promote quality and safety at all DAN referral treatment centres.

RCAPP – 1

Initial facility assessments to initiate contact, determine primary needs and involve facilities.

Main purposes:

- Review chamber facilities and perform safety assessments
- Grade facilities into one of six levels of appropriateness for referrals
- Establish individual reimbursement agreements; solve insurance and communication issues
- Gather initial information on composition of local diving industry for support purposes

RCAPP – 2

Advancing our partnerships with treatment centres and working to develop the regions further.

Main activities include:

- Direct dive medical support by DAN Regional Directors
- Ongoing technical support
- Joint training programmes:
- DAN Divers Days
- DAN Diving Safety Workshops
- DAN Medicine Courses
- Joint research programmes:
- Dive Safety Laboratory and Project Dive Exploration
- DAN Internship Programmes
- DCI Outcome Studies, etc.



Francois has vast experience in chambers and has visited numerous chambers around the globe. Here are his visits at a glance.





Staying Healthy



By Dr De Frey

Source: Travel Doctor

www.traveldoctor.co.za

The best-laid travel plans can go awry if you fall ill while travelling. By taking the following precautions you can minimise your risk to a great extent.

PREVENT INSECT BITES

Many diseases, like malaria, dengue and Japanese encephalitis, are spread through insect bites.

Prevent insect bites by:

- Using insect repellent with 30% - 50% DEET.
- Wearing long-sleeved shirts, long pants and a hat outdoors.
- Remaining indoors in a screened or air-conditioned area during the peak biting period for malaria (between dusk and dawn).
- Sleeping in beds covered by nets treated with permethrin, if not sleeping in an air-conditioned or well-screened room.
- Spraying rooms with products effective against flying insects, such as those containing pyrethroid.

BE CAREFUL WHAT YOU EAT AND DRINK

Diseases contracted from contaminated food and water are the leading cause of illness in travellers.

Follow these tips for safe eating and drinking:

- Wash your hands often with soap and water, especially before eating. If soap and water are not available, use an alcohol-based hand gel (with at least 60% alcohol).
- Drink only bottled or boiled water, or carbonated (bubbly) drinks in cans or bottles. Avoid unsafe tap water, fountain drinks and ice cubes.

- When possible do not eat food purchased from street vendors.
- Make sure food is well cooked and still piping hot when consumed.
- Avoid dairy products, unless you know they have been pasteurised.
- Diseases from food and water often cause vomiting and diarrhoea. Ensure you take diarrhoea medicine with you for self treatment of mild cases.

OTHER HEALTH TIPS

- To avoid animal bites and serious diseases (including rabies and plague) do not handle or pet animals, especially dogs and cats.
- If you are bitten or scratched, wash the wound immediately with soap and water, apply iodine and seek medical attention to determine if medication or an anti-rabies vaccine is needed.
- To avoid infections such as HIV and viral hepatitis, do not share needles for tattoos, body piercing or injections.
- To prevent fungal and parasitic infections, keep feet clean and dry, and do not go barefoot, especially on beaches where animals may have defecated.

UPON YOUR RETURN

If you have visited a malaria-risk area, continue taking your malaria prophylaxis after your return as indicated by your doctor. Malaria is always a serious disease, even deadly. If you become ill with a fever or a flu-like illness either while travelling in a malaria-risk area or after you return home (for up to one year), you should seek immediate medical attention and make sure your doctor is aware of your travel history. ^AD

“

The best-laid travel plans can go awry if you fall ill while travelling.

”

DAN Products

OXYGEN UNITS



DAN SOFT-SIDED OXYGEN UNIT

The Soft-Sided Oxygen Unit uses a compact, water-resistant nylon case, which was exclusively designed for the unit. New from DAN, the Soft-Sided Oxygen Unit was created for divers and professionals who do not require a waterproof case for their oxygen unit. It contains the same components as the standard Rescue Pack Extended Care. The case includes a front pocket and a zippered top lid for easy access to the cylinder. An adjustable shoulder strap and top haul loop provide two easy carry options, and a nylon daisy chain runs down the back of the case, making it simple to secure in your vehicle or boat.



DAN RESCUE PACK EXTENDED CARE

Ideal for dive sites and larger dive boats. Includes: 1600 Pelican waterproof case, brass multifunction regulator, demand valve with hose, Luxfer Jumbo-D cylinder, oronasal resuscitation mask (DAN pocket mask), hand-wheel with chain, non-rebreather mask, silicone Tru-Fit mask. Dimensions: 61.6 cm X 49.3 cm X 22 cm; Weight: approximately 6.4 kg (case only); Delivery time: 60 minutes.



DAN RESCUE PACK

Ideal for shore-based diving and training activities. Includes: 1450 Pelican waterproof case, brass multifunction regulator, demand valve with hose, Luxfer M9 cylinder (248.22 l)/(8.77 CU.FT.), oronasal resuscitation mask (DAN pocket mask), silicone Tru-Fit mask, hand-wheel with chain and a non-rebreather mask. Dimensions: approximately 40.6 cm X 33 cm X 17.4 cm; Delivery time: 20 minutes.



DAN DUAL RESCUE PACK EXTENDED CARE

Includes: Two Luxfer Jumbo-D cylinders, 1600 Pelican waterproof case, brass multifunction regulator, demand valve with hose, oronasal resuscitation mask (DAN pocket mask), hand-wheel with chain, non-rebreather mask, silicone Tru-Fit mask. Dimensions: 61.6 cm X 49.3 cm X 22 cm; Weight: approximately 6.4 kg (case only); Delivery time: 120 minutes.

FIRST AID KITS

DAN FIRST AID KIT – HARD CASE

Includes: Irrigation syringe, eye wash, alcohol-free wipes, butterfly suture strips, wound strips, dressing, eye pad, conforming gauze bandage, adhesive tape, triangular bandage, EMT shears, disposable razor, safety pins, cold compress, heat compress, isothermic blanket, infectious waste bag, latex gloves and a resuscitation barrier device. All these components are packaged in an underwater HPRC waterproof case. Dimensions: 24 cm x 19 cm x 11 cm (small case).

DELUXE PLUS FIRST AID KIT

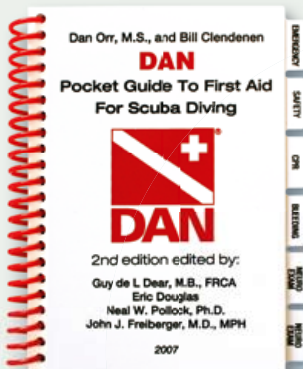
This first aid kit provides the same contents as the DAN First Aid Kit but also includes a SAM splint and DAN pocket mask in a bigger case. Dimensions: 34 cm x 29 cm x 16 cm.



BOOKS

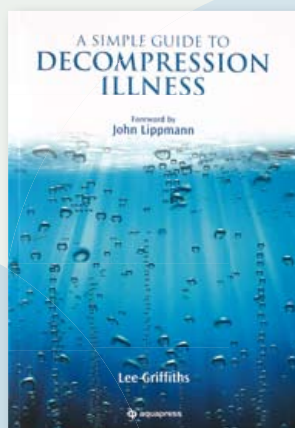
DAN POCKET GUIDE TO FIRST AID FOR SCUBA DIVING INJURIES

This waterproof booklet presents succinct emergency first aid steps for diving injuries in an easy-to-read format. Written by DAN's Dan Orr and Bill Clendenen



and edited by DAN Associate Medical Director Dr Guy Dear, it's an essential addition to your dive bag. Some of the covered topics include Creating an Emergency Assistance Plan, Assessing the

Patient, Controlling Bleeding, Performing a Field Neurological Exam and more. Made of waterproof/plastic paper, this guide can go everywhere with you. Not designed to teach the skills necessary for first aid, rather you can use it as a reminder for the appropriate steps you need to take in an emergency.

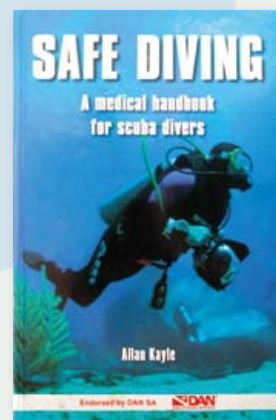


A SIMPLE GUIDE TO DECOMPRESSION ILLNESS

This book enables divers to have a thorough understanding of some of the medical problems and illnesses associated with diving. After reading this book you will be able to fully recognise each of the individual conditions and have a clear understanding of the best action to take in the event of decompression illness.

SAFE DIVING

Safe Diving focuses on basic medical fitness to dive. Written in an easy, readable style, it is essential reading for all scuba divers, rescue divers, dive instructors, DMOs and hyperbaric chamber operators, and should form part of the library of all dive training agencies, dive resorts and live-aboard dive boats. *Safe Diving* is endorsed by DAN Southern Africa.



ACCESSORIES



MEMBERSHIP TAG

At only R20, these tags are a must for any DAN member. These rectangular member tags are 65 mm x 40 mm in size and are engraved with the member's name and membership number. Attach your red tag to your BC for easy identification of your DAN membership status.

**TO ORDER,
ENQUIRE AT
YOUR NEAREST
DIVE SCHOOL, OR
AT DAN-SA ON
0860 242 242**



HIDE AND SEEK



DAN member Michael Hindley submitted this issue's *Parting Shot*. This is what he has to say...

“

Whilst diving on Quarter Mile Reef in Sodwana this year, hoping to get some amazing shots, I managed to get a shot of this sneaky creature. There I was, keeping my eyes peeled for any action when I was completely caught off guard by this critter who suddenly popped up from the reef right next to me! I did not notice him at first as he was well camouflaged. I only spotted him after a frantic nudge from my dive buddy. Boy was he close!

Having calmed down from my surprise, I managed to get a full body shot of him.

”

***Parting Shot* gives you a chance to share your interesting dive stories and images with us.**

Have you encountered a rare or exciting activity underwater and captured it? Has an underwater event just added that something extra to your dive and you have a photo? If so, all you have to do is send through your high resolution image (300 DPI) along with your story (including a brief description of your creature, location of dive site and pertinent photo information) and contact details to partingshot@dansa.org and your submission could appear in the next edition of *Alert Diver*!

All images submitted for the *Parting Shot* become the property of DAN.

DAN CONTACT DETAILS

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South Africa, Swaziland, Lesotho, Namibia, Botswana, Zimbabwe, Mozambique, Angola, Zambia, Zaire, Malawi, Tanzania, Kenya, Madagascar, Comoros, Seychelles and Mauritius.

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Geographical Europe, European Territories, and Protectorates, with regional IDAN responsibility for the countries of the Mediterranean Basin, the countries on the shores of the Red Sea, the Middle East including the Persian Gulf, the countries on the shores of the Indian Ocean north of the Equator, as well as the related overseas territories, districts and protectorates.

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dive safety

begins with me

On-Site Neurological Assessment for Divers

When you want to know more.



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www.dansa.org

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Midrand, 1685
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