



Australasian Hyperbaric & Diving Medicine Research Trust

**Australasian Hyperbaric & Diving Medicine  
Research Trust Grant Application  
2012 Round 4 Interim Report**

**1a. Project Title:**

What Is The Incidence of Middle Ear Barotrauma in Novice SCUBA Divers and Can It Be Reduced?

**1b. Investigators and Institutional Affiliations:**

Dr Denise Faye Blake BN, MD, FRCPC, FACEM, PG Dip Med Sci (Diving and Hyperbaric Medicine)  
Staff Specialist, Emergency Department, The Townsville Hospital  
Adjunct Senior Lecturer, School of Marine and Tropical Biology, James Cook University, Townsville, QLD

Dr Katherine H Commons MBChB  
Registrar, Hyperbaric Medicine Unit, The Townsville Hospital

Dr Clinton R Gibbs MBBS, FACEM, Dip DHM (SPUMS), PGCertAME  
Staff Specialist, Emergency Department, The Townsville Hospital

Dr Catherine A Meehan MBBS, PG DIP Med Sci (Diving and Hyperbaric Medicine, Dip DHM (SPUMS)  
General Practitioner, McLeod Street Medical, Cairns, Queensland

Lawrence H Brown PhD, MPH&TM  
Senior Principal Research Officer  
School of Public Health, Tropical Medicine and Rehabilitation Services  
James Cook University

**1d. Institutions/sites where research will be conducted:**

Prodiver, Cairns dive training centre, pool and dive boats  
Deep Sea Divers Den Cairns dive training centre, pool and dive boats

**1e. Administering Institution/Deductible gift recipient status:**

James Cook University Research Services  
Division of Finance and Resource Planning  
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## **1f. Principal Investigator:**

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## **2. Hypothesis and Aims:**

The aim of this study is to assess the hypothesis that education about ear equalization techniques using video otoscopy in open water Self Contained Underwater Breathing Apparatus (SCUBA) diver candidates will decrease the incidence of middle ear barotrauma.

This study will test two null hypotheses:

HØ1: There is no difference in the frequency of grade 2 or greater post-dive barotrauma in PADI open water dive candidates who participate in an extra educational session on ear equalization techniques compared with dive candidates who are not exposed to the extra educational session.

HØ2: There is no difference in the severity of post-dive barotrauma in PADI open water dive candidates who participate in an extra educational session on ear equalization techniques compared with dive candidates who are not exposed to the extra educational session.

## **3. Summary Of Progress:**

We have completed 3 dive trips and are half way through collecting the control group data. All dive trips have been with Prodiver in Cairns. Student numbers have been increasing. Interim analysis below:

6 (21.4%) with middle ear barotraumias (MEBT) after 1st pool dive; 1 (3.5%) bilateral  
14 (50%) with MEBT after 2nd pool dive; 6 (21.4%) bilateral  
11 (39.3%) with MEBT after 1st ocean dive; 8 (28.6%) bilateral  
16 (57.1%) with MEBT after 2nd ocean dive; 10 (35.7%) bilateral

Only 9 individuals (32.1%) without MEBT at any point

No relationship between whether instructed in primary language and MEBT:

Instructed in primary language, MEBT = 11/15 (73.3%)

Not instructed in primary language, MEBT = 8/13 (61.5%)

Fisher's exact test,  $p = 0.689$

There have been no changes to the project. We have purchased a second otoscope handle and a pelican case to house our equipment for use on the dive boat.

Time to travel to Cairns has been difficult due to work and exam commitments. We are unsure how the new legislation surrounding recreational dive medicals will affect our ongoing research. We are hoping that our ear assessment will still be seen as valuable.

The first version of our ear barotrauma book has been completed and printed on Mac book. We have started preparing the presentation for the intervention group. Interest from DAN America has been raised to formally design an ear assessment program along the lines of their neurological assessment course.

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