

# Editorial

## The future of diving research in Norway

Norway has a long tradition of quality research within the field of baromedicine. With the discovery of oil in the North Sea, it became important to establish scientific research facilities to overcome immediate challenges, but also to work towards long-term goals. For the diving community, an understanding of the pathophysiology of decompression sickness (DCS) has been one of the major forces to maintain focus on the importance of scientific research in this field. In addition to oil, the aquaculture and fish farming industries are increasing in size and are Norway's second biggest export industry today. It also requires underwater workers for the inspection and repair of underwater structures and fishnets.

The importance of health and safety for the underwater worker was identified early on by the offshore industry. The Norwegian Petroleum Safety Authority publishes a yearly report that identifies all offshore diving activity. The last reported incident of DCS was in 2002, whilst the last fatal saturation diving accident was in 1987.<sup>1</sup> In-shore diving operations in Norway are regulated through the Norwegian Labour Inspection Authority and here the track record is different; since 1979 there have been 28 fatalities, and they continue to occur.<sup>2</sup>

At the Norwegian University of Science and Technology (NTNU), there has been a research group investigating barophysiology since the early 1980s. Led by Professor Alf O Brubakk, this research has been recognized internationally and has provided ground-breaking insights into the pathophysiology of DCS. This has included the identification of vascular gas bubbles through the use of ultrasound and identifying the importance of both protecting the vascular endothelium to maintain fitness to dive and also regular physical activity to reduce the risk of the adverse effects of diving. The group has educated many students, physiologists, engineers, medical doctors and researchers, all in the spirit of Professor Brubakk who considered that education was at least as important as the research itself.

In 2008, Professor Brubakk was concerned about the future, as he was soon to retire. Great effort was put into perpetuating his position but this process ended when the University axed the only professorial position in environmental physiology in Norway. Today, there is only one non-permanent barophysiology research position at NTNU. This position and all research activity is dependent on external funding, so the education and research environment has changed drastically. Whilst there are clinicians in Norway working at different hyperbaric centres who participate in research related to barophysiology, this is not their primary task. With the lack of funding to include education and students in research, the rich history of barophysiological research at NTNU will be at an end. In Norway, the majority of grant-

funded scientific programmes last only three years, so it has not been easy to recruit or to keep expertise between grants.

So, who is planning for long-term research efforts in Norway? Whilst there are obvious challenges left to study in barophysiology, there is a lack of understanding amongst those responsible for decision-making and funding of the importance of having an academic-based research centre for diving research. NTNU, one of the world's most advanced hyperbaric laboratories, built up at considerable capital expense to investigate the pathophysiology of diving and decompression, is about to be closed and dismantled.

At a time when the off-shore industry is putting greater focus on finding better solutions for safer underwater work environments, and in-shore diving is facing huge challenges due to a worrying level of serious accidents and increasing activity, there is no political drive in Norway to acknowledge the importance of maintaining the research facilities that support this industry. If the door does close on the NTNU facility, it will take many years and substantial funding to re-establish a modern research centre. Most importantly, it will be impossible to bring new students into the field of barophysiology in the foreseeable future.

Whilst the off-shore oil industry has a finite future, aquaculture and other in-shore activities requiring diving support continue to expand. Good barophysiological research in established centres will be essential to support these industries into the future. Alf Brubakk often quoted an old Chinese proverb: "When planning for a month, sow rice, when planning for a year, plant trees, when planning for a decade, train and educate men". In Norway, we are only planting trees.

### References

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### Key words

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