Short communication

Post-training dive inactivity in Western Australia

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Key words
Recreational divers, diver numbers, survey, questionnaire

Abstract
(Buzzacott P, Pikora T, Rosenberg M. Post-training dive inactivity in Western Australia. *Diving and Hyperbaric Medicin*e. 2008; 38: 197-199.)
Introduction: A lack of recent diving experience is often cited as relevant in analyses of diving fatalities. The purpose of this study was to measure diving inactivity amongst trained scuba divers within Western Australia and to identify reasons for extended diving inactivity.
Methods: In March 2005, self-administered surveys were mailed through 22 diving training centres to Western Australians who had completed a scuba diving course within the previous five years (n = 2,077).
Results: Three-hundred-and-five of 505 returned questionnaires were suitable for analysis. Within two years of completing scuba training, one in five divers had not dived for at least one year, with one half of these making only one post-course dive. Compared with active divers, inactive divers were younger, more likely female, owned less dive gear, were less likely to own a boat and completed fewer additional dive courses. Reasons cited for not diving were a lack of time, diving equipment, someone to dive with and/or money.
Conclusion: Divers likely to spend extended periods between dives, without intending to permanently give up diving, may benefit from additional support during their first post-course year.

Introduction

One widely adopted schema for safe diving practice states: "*Keep proficient in diving skills,… reviewing them in controlled conditions after a period of diving inactivity,..*".[1] There is evidence that a proportion of divers do not follow this advice. A Texas study of divers aboard a dive boat classified divers as 'active' if they had made one or more dives during the previous year, but of 528 divers surveyed just 461 (87%) reported making dives during the previous year, suggesting 13% of the certified divers on their way to a popular dive site were returning after an extended break.[2]

Why divers discontinue diving for extended periods is of particular importance to the recreational diving industry. Of 159 Australian recreational diving fatalities occurring amongst certified divers in open water between 1978 and 2002, 21% (n = 34) were noted as having died whilst returning to diving after an extended break.[3–9] Of these divers, 59% (n = 20) were also noted to have been inexperienced, suggesting many inactive divers commence their extended break soon after they complete their training.

If the proportion of divers in Texas found returning to diving after an extended break were to be representative of the Australian experience, we might consider returning divers are over-represented in diving-related fatality reports. For this reason, it is important to investigate the reasons why Australian divers may have absences from diving. Previous studies in both Australia and the USA suggest these reasons include a lack of time, money, diving equipment, dive buddies and/or local dive sites.[10–12]

Methods

A cross-sectional survey of recreational divers certified within the previous five years was conducted between March and September 2005. The research was approved by the University of Western Australia Human Research Ethics Committee. The self-administered questionnaire collected information on frequency of diving since completing a dive certificate, demographics and reasons for not diving if no dives were reported during the previous 12 months (defined as 'inactive'). Divers were also asked to report ownership of eight types of dive gear: mask/snorkel/fins, wetsuit/weight-belt, dive watch, dive computer, safety sausage, regulators/gauges, buoyancy control device and scuba cylinder. Validity was assessed during questionnaire development and pilot tested with 20 Western Australia (WA) dive club members.

Thirty-nine dive businesses listed in telephone directories current in WA at the commencement of the study indicated they trained divers and, of these, twenty-two (63%) mailed surveys to their customers on behalf of the research team, ensuring client confidentiality. To determine if respondents differed significantly from the population of interest, two dive centres supplied the age and gender for each diver mailed a survey.

Table 1
Gender and age distributions for two dive centres and respondents

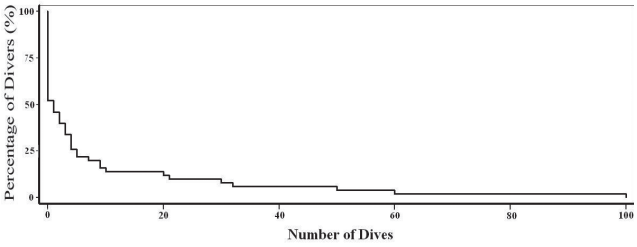
	Two dive centres	Respondents	Two dive centres age at certification	Respondents age at certification
	n (%)	n (%)	Years (SD)	Years (SD)
Males	248 (71%)	350 (70%)	29.8 (+/- 11.7)	31.2 (+/- 11.2)
Females	101 (29%)	126 (25%)	29.5 (+/- 10.4)	29.2 (+/- 10.4)
Total	349 (100%)	476 (95%)*	29.7 (+/- 11.3)	30.6 (+/- 11.0)

* Twenty-three values (5%) missing

DATA ANALYSIS

The data were analysed using SAS ver. 8.02 (SAS Inc, North Carolina). Reported univariate P values are the result of Wilcoxon rank sum test for difference in mean age and Fisher's exact tests for categorical variables.[13] Odds ratios (OR) are reported with 95% confidence intervals (CI). Variables were fitted to a logistically transformed, general linear model, and backwards elimination used to remove least significant effects. Significance was accepted at $P < 0.05$.

Figure 1
Number of post-course dives before an extended break from recreational diving



Results

Of 2,077 surveys mailed to certified divers within WA, 108 were returned unopened, marked "not at this address", and 505 were returned completed. Of those 505, six were completed by divers living outside of WA and 194 by divers trained for less than a full year, resulting in 305 useable surveys and a response rate of 17% (305/1,769). Of the 305 divers living in WA who had been trained for more than one year at the time of survey, 85% (n = 259) were active divers and 15% (n = 46) had not dived for at least 12 months. One half of inactive dive course graduates reported commencing an extended period of diving inactivity immediately following their course and 75% before making six post-course dives (Figure 1).

CHARACTERISTICS OF DIVERS

Divers who were inactive during the year prior to the survey were significantly younger when certified than those classed as active (32.8 years, range 12.7–64.8, versus 27.6 years, range 14.2–52.1, P = 0.003). These divers were also significantly more likely to be female (OR 3.54, 95% CI 1.85, 6.75), although female divers made, on average, the same number of dives as males before commencing an extended break. There was no significant difference between the 349 training records supplied by two dive centres and the 499 WA respondents in either mean age at certification (P = 0.24) or gender distribution (P = 0.31) (Table 1).

Compared with active divers, inactive divers were more likely to report owning fewer than two types of gear (median 1 versus 6, $P < 0.0001$) and less likely to have taken any additional dive courses (6.5% versus 35.9%, $P < 0.0001$). No significant differences were found between active and inactive divers on the basis of height, weight or body mass index (BMI), the number of standard alcoholic drinks reportedly consumed per week by either males (P = 0.40) or females (P = 0.33), or smoking status (P = 0.09). Active divers were, however, more likely to report owning a boat (OR 2.4, 95% CI 1.2, 4.9).

Fitting the variables to a logistic model and eliminating least significant effects (smoking status (P = 0.76), BMI (P = 0.48), alcohol consumption (P = 0.40) and age (P = 0.28)) the predictors of diving inactivity were owning fewer than two items of dive gear (OR 10.1, 95% CI 4.6, 22.5), the lack of additional training (OR 8.6, 95% CI 2.4, 30.5), being female (OR 3.0, 95% CI 1.4, 6.3), and not owning a boat (OR 2.3, 95% CI 1.0, 5.2). For the 46 inactive divers, the reasons why they had not dived during the previous year are listed in Table 2. Multiple reasons were given by many of them. Reasons grouped as 'other' included low confidence

Table 2
Reasons given for diving inactivity

Reason	n (%)
No time	32 (70)
Lack of equipment	24 (52)
No dive buddy	20 (43)
Cost	19 (41)
Medical/health	12 (26)
Other	9 (20)

diving without a refresher course, geographical location and poor motivation.

Discussion

This survey suggests most divers taking extended leave from the sport do so within one or two post-certification dives and report having too little time, no equipment and/or no dive buddies. These reasons are similar to those provided by other inactive diving populations though we did not explore causality in this study.

The significant limitation of this study was a response rate of only 17%. For mail surveys, response rates of between 10% and 40% are common, but rates higher than 50% are desired before non-response bias becomes less of a concern.[14,15] Contacting non-responders multiple times, and/or using multiple modes of contact such as mail, telephone and e-mail may have helped but, as the survey was anonymous, participating dive centres were unable to determine which divers had responded and which had not, so divers were only contacted once. Although no significant differences were found between the 349 training records supplied by two dive centres and the 305 respondents with useable data in either mean age at certification or gender distributions, respondents may differ from the rest of the WA recreational diving population in other, unidentified ways. Accordingly the results of this study should be interpreted with caution.

Recent diving inactivity is often cited as a relevant factor in analyses of diving fatalities. It is likely, however, that many divers do not return to diving after a year or more passes since their last dive. Research identifying whether divers who permanently leave the sport differ from temporarily inactive divers would be valuable if methods to encourage engagement in the sport beyond the first two dives could reduce the likelihood of divers (who do not intend giving up diving altogether) taking early, extended, yet temporary periods away from diving. This might include supporting multiple dives within the first year following training, incorporating organised dive trips with equipment hire and additional training.

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