

# Children and scuba diving

## Editorial

### Children and diving: a paediatric perspective

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Diving is magical. Childhood is magical. Does it necessarily follow that the two should interact safely or well? Since the inception of scuba (self-contained underwater breathing apparatus), children of various ages have been involved in diving. Almost certainly, children of current SPUMS members number among them. That the progeny of elite divers such as Jacques Cousteau have been able to dive safely, however, should not be taken as a recommendation for the general public.

The Australian Standard (AS 4005.1) sets a minimum age of 14 years for basic open-water scuba training and certification.<sup>1</sup> What of alternative 'restricted' forms of scuba experience that are not covered by existing standards? The industry-wide minimum training standards for recreational diving have now been set to allow children under 15 years of age to learn to dive under adult supervision. This paper considers the developmental issues for children entering these programmes.

PADI have adopted a minimum age of 10 for Junior Scuba Certification, with supervision by a PADI professional, or Junior Open Water Certification with parental supervision. The basic requirements for certification are the same as for adult programmes, but within each level of certification there are strict limits of age, maximum depth and level of supervision during diving. In addition, there are programmes for snorkelling and SASY (supplied-air snorkelling) from five years old, and Bubblemaker and PADI Seal Team from eight years old.<sup>2</sup> These activities are marketed with an emphasis on fun.

The minimum age requirements for different levels of activity in addition to other limitations are aimed at minimizing potential risks and are based on widely held expectations of a child's intellectual, physical and psychological development. What must be recognised, however, is that a child's developmental age is not always the same as their chronological age. All children develop in a similar sequence but at differing rates.

There are many developmental theories based to varying degrees on nature versus nurture, social, environmental and genetic factors. It is not appropriate to go into detail, but essentially these constructs study how a child learns and gains skills, looking at their physical, cognitive, social and

emotional development. For most children (but not all), the different areas of development progress together, rather than independently, but it may be that physical growth for example does not equate with emotional maturity. While it is true that these widely held expectations are appropriately based on broad age ranges at which developmental stages are achieved, readiness to dive should not be assessed simply on the basis of chronological age. What is required is that these more complex cognitive and psychosocial factors be considered at each stage through a child's diving instruction. Ideally, failure to meet the developmental expectations in any one of these areas should mean the child is not certified until the appropriate level can be achieved.

Physiologically, there are obvious differences between a growing child and an adult. The suggested age and maximum depth limitations are in place to minimize potential risks. It must, however, be acknowledged that there are limited published data on diving physiology in (human) children. The adequacy of these restrictions is therefore largely speculative. Similarly, there are very few outcome data against which to judge the current limitations. Industry-based figures from groups such as Confédération Mondiale des Activités Subaquatiques (CMAS) and PADI are of some reassurance, but are likely to suffer from under-reporting.<sup>3</sup>

Supervision by an adult, whether parent, guardian or divemaster, needs to be exactly that – close supervision, not just the presence of an adult 'buddy' nearby. Children have a shorter attention span than adults, are more distractible and are more likely to wander off to varying depths, attracted by something magical. They may be less reliable in monitoring their own or their buddy's air supply and depth (it is not unheard of for adults to behave in the same way). Children can be less consistent in problem solving, particularly when put under stress.

It is important, therefore, that they have a true understanding of the issues, for example, of depths, pressure and volume changes and how air supply is affected. They may not otherwise take the time or think clearly underwater to be able to modify a dive plan accordingly. Whilst the theory is taught as an integral part of dive training, and is practised in the training environment, a high level of judgment and maturity is still required for the junior diver to be able to apply this knowledge in the wide range of scenarios likely to be encountered whilst diving. Ideally, the supervising adult should be ready to address these issues, particularly in an 'at risk' situation when a child is more prone to react by reflex. In danger, they will almost invariably look to an accompanying 'adult'.

As a dive buddy then, how much of this responsibility should we expect a child to be able to take upon themselves if a dive incident occurs? The child must be competent to the

point of their own safety in a worst-case scenario, i.e., if the adult buddy becomes unresponsive for whatever reason. Again, diving instruction addresses these issues but, as with some adults, this may not be consistently applied underwater. Behaviour is difficult to predict, particularly in the 10–15 year age group. There are many incidents of children acting to save the life of an adult. Most examples, however, occur on land when any initial period of panic usually occurs in a more forgiving environment than that present underwater.

Many parents allow their children to participate in sports of their own choosing. Participation in diving requires the consent of the parent (or guardian) as well as that of the child. Informed consent from a child, even as they approach 15 years of age, can be a difficult issue. They are more likely to consider only the immediate self-directed benefits and enjoyment and, depending on how the facts are presented, the immediate dangers. They are less likely to give thought to long-term consequences. It is important that a parent recognises that in giving consent for any ‘minor’ to dive they take the risks and responsibilities entirely upon themselves. Whilst injuries during diving appear to be less frequent compared with those sustained by children in some contact sports, they are generally more severe. Parents need to clearly understand that there is a small but well-documented risk of death or permanent disability, and that such adverse outcomes can occur during the dive training process.<sup>4,5</sup> A small, prospective ‘theoretical’ risk will almost certainly be viewed differently with the benefit of retrospectivity.

Few would argue the potential joys and benefits of diving. It opens children up to a world of travel, geography, underwater interests, colour and beauty. Achievement and enjoyment boost self-esteem and confidence, which may have a positive impact upon schooling and social skills. It

is an activity that for most children will be family oriented, something they can share and build upon with their parents and siblings.

The various cognitive, developmental and physical fitness issues need to be carefully considered in assessing the suitability of each child to participate in a given level of dive activity. Diving is certainly magical but it is more complex than simply meeting the minimum requirements for one’s certification, donning the gear and getting into the water.

## References

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## Key words

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