Child safety: SCUBA diving

SCUBA divers get to enjoy a unique perspective, and children can learn a lot from being exposed to the mysteries of the underwater world. However, SCUBA diving also requires the use of sophisticated equipment and techniques and small errors can be fatal. Whether children should be given such immense responsibility is questionable. Therefore, it is recommended that children and teens be introduced to SCUBA slowly and with great consideration for their emotional aptitude to handle emergency situations.

The number of SCUBA organisations actively pursuing younger participants has risen dramatically in the last few years. Due to the different risks posed to children and youth divers, it is critical that any organisation providing training or tours to youth divers be very well informed about the increased likelihood children have for injuries, including hypothermia and ear squeeze.

The most important factor in youth SCUBA diving is whether a child is truly emotionally and analytically ready to handle the risks of an underwater environment. Even experienced adult divers are prone to panic or behave irrationally in an emergency.

Recent Cases in Europe include:
A British father and son died diving in Malta in less than 20 metres water after the father attempted to save his panicked son and both succumbed to decompression illness.
A Swedish teenager died during an open water group training with her diving club. She was separated from her buddy and her body was not recovered.
A British 13 year old and his guardian died of decompression illness and drowning when they got into danger diving in the Farne Islands and in panic ascended too quickly.
A 17 year old diver drowned in Malta when he became separated from his buddy.

Be aware that due to lung immaturity, no child under 8 years of age should receive any SCUBA training, and many national organisations support a starting limit of 12 years of age, and then only after snorkel training has been practiced.

Children and youth risk suffering from barotraumata, or “ear squeeze.” A study of a diving school in Belgium found that 12% of children performing swimming pool trainings suffered from Eustachian tube dysfunction, and there were several cases of membrane perforation as well. A rigorous program of ear clearing training was successful in preventing further ear injuries.

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Another overlooked risk to children and youth is their vulnerability to hypothermia, which can become serious very quickly in an underwater situation. Children’s bodies cool much more quickly than adult bodies, especially slender children. Surprisingly, hypothermia can occur in warm water as well, the risk beginning at 25 degrees Celsius.
Why SCUBA diving can be risky for children and youth

While careful water temperature and dive depth control, rigorous ear clearing technique, thorough training and proper equipment can help youth divers prepare for a real dive, most significant is whether a child is truly ready to enter an underwater environment and handle high-risk scenarios without panicking and without the benefit of verbal contact. Most diving accidents are caused by the diver panicking and ascending too quickly, which causes decompression sickness, or “the bends.”

The Divers Alert Network found that 24 out of 1248 diving fatalities were youth divers between 10 to 17 years of age, comprising 1.9% of all scuba fatalities, and each of those deaths was listed as accidental and preventable. In most cases, the cause of death was an air embolism, caused by a too rapid ascent. Rapid ascents are most often caused by a diver panicking and ascending despite the danger which they have been made aware of in training. Many of those adolescents had little training and experience and were performing high risk dives such as deep, cave, or wreck entry dives. It is not recommended that even SCUBA certified youth be taken on high risk dives. Unseasoned SCUBA divers are already at high risk simply within training programs, without adding on other complicating factors.

Recommendations for training youth SCUBA divers

- SCUBA trainers working with children should be specially trained for teaching children, and be made aware of the increased risks.
- Children under the age of 8 should never perform diving training due to lung immaturity. Many organisations recommend a minimum age of 12 to begin first stage training.
- Children should be a minimum weight of 45 kilograms and a minimum height of 150 centimetres before beginning training.
- Children should be strong swimmers and have already mastered snorkel techniques.
- Pool training should precede open water training.
- Open water dives should only take place in still, warm clear water with limited depth and easy access.
- Dives should last no longer than 10 minutes in 12 degree water, and no longer than 25 minutes in warm water.
- Children should be able to jump from and board the dive boat themselves and carry their own equipment.
- Children may not serve as dive buddies to each other, their dive buddy must be an experienced adult.
- Teach children not to ascend faster than their air bubbles.
- Medical consensus advises that divers of all ages should avoid altitude changes of 500 metres above sea level for 12 hours after a single dive, and for 18 hours after multiple or decompression dives.
What safety factors to look for in choosing and maintaining equipment

Due to the clear risks entailed in SCUBA diving, the equipment is more widely regulated than most sports equipment. Diving organisations must follow the standards mandated for diving services outlined in EU standards EN 14467, EN 14413, and EN 14153, as well as compressed air standards detailed under EN 12021.

Regularly analysing air quality and keeping a log of air analysis records are important elements of safe services. Records should include operating time of the compressor, and times/dates of filter replacement.

Diving organisations training divers or providing equipment in cold water environments must also take care to control the balance of water vapour concentration due to the increased risk that ice could cause a blockage in the breathing apparatus.

Disqualifying medical conditions for SCUBA diving

- Any form of asthma and various cardiac conditions
- Epilepsy
- Insulin dependent diabetes
- Muscular dystrophies
- Sickle cell anemia
- Any animal sting allergy
- Hyperactivity

Youth who take any of the following categories of medications should not dive:

- Anti-depressants
- Antihistamines and decongestants
- Insulin
- Anti-convulsants
- Narcotics and anti-psychotics
- Central nervous system stimulants and anorectics

Staff Preparedness

- Be sure that all staff members are trained in CPR and first aid for adults and children.
- Dives with children will require extra staffing in order to ensure that every diver has an adult buddy.
- All diving boats should be equipped with safety equipment, a reliable communications system, and the appropriate safety flags and signals.
- Always leave a dive plan with your local rescue services, and fly the “Divers Alert” Alpha flag to ensure boaters are aware of the presence of divers.
- Have oxygen available for multiple victims.
- Be sure that you have an emergency evacuation plan that will transport victims of decompression illness to a hyperbaric chamber as quickly as possible.
- Be prepared for more than one victim, especially when caregivers are diving with children who they are unlikely to abandon underwater in an emergency.

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