







Adaptations 6 Freediving

William Trubridge underwater glide, photo by Jayhem

Components

	NAME	DESCRIPTION	AUDIENCE
	<i>Freediving</i> teachers guide	Human freediving provides a context for comparing acclimatisation and adaptation.	teachers
	<i>Problems with pressure</i> background sheet	This background sheet for teachers provides information on problems of pressure when diving to depth. It includes freediving, scuba diving, and adaptations of diving animals.	teachers
	<i>Vertical Blue</i> video	This video shows world champion freediver, William Trubridge, complete an 88-metre dive.	students
	<i>Dangers of diving</i> worksheet	This three-part worksheet allows students to investigate diving abilities of freedivers, risks of diving to depth associated with pressure; and adaptations of the Weddell seal that enable it to cope with pressure at depth.	students

Purpose

To **Elaborate** on students' knowledge of adaptations of air-breathing, diving animals by investigating potential hazards of diving to depth associated with pressure.

Outcomes

Students:

- distinguish between acclimatisation and adaptation;
- appreciate that human diving ability is restricted by structure and physiology;
- understand risks of diving associated with pressure, particularly behaviour of gases under pressure; and
- recognise structural, physiological and behavioural adaptations that enable diving animals to cope with pressure.

Activity summary

ACTIVITY	POSSIBLE STRATEGY
Teacher introduces the video, <i>Vertical Blue</i> , which features an 88 m dive by current freediving world champion, William Trubridge.	whole class or individually if resources available
Teachers distribute the three-part worksheet, <i>Dangers of diving</i> . The worksheet can be completed as a whole, or in parts.	individually or in small groups completed as part of class discussion, class activity, or homework

Teachers notes

The video, *Vertical Blue*, depicts world champion freediver William Trubridge completing an 88 m dive. William Trubridge currently holds the world record at 101 m in the category 'constant weight without fins'. In this discipline the diver competes without any assistance.

Encourage students to consider the abilities of a professional freediver in light of what they have learned regarding adaptations. The video provides an ideal opportunity to consider differences between adaptation and acclimatisation, either as a group discussion or in conjunction with part 1 of the worksheet, *Dangers of diving*.

To explore freediving further we recommend the websites www.verticalblue.net and www.aidainternational.org

Technical requirements

The teachers guide requires Adobe Reader (version 5 or later), which is a free download from www.adobe.com.

QuickTime version 7 or later is required to view the video. This is a free download from www.apple.com/quicktime. A high quality MP4 version is available on CD-ROM or download from the SPICE website.

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Web: spice.wa.edu.au
Email: spice@uwa.edu.au
Phone: (08) 6488 3917

Centre for Learning Technology (M016)
The University of Western Australia
35 Stirling Highway
Crawley WA 6009

Associated SPICE resources

Adaptations 6: Freediving may be used in conjunction with related SPICE resources to study structural, physiological and behavioural adaptations.

DESCRIPTION	LEARNING PURPOSE
<p><i>Adaptations (overview)</i></p> <p>This learning pathway shows how a number of SPICE resources can be combined to teach the concept of adaptations in plants and animals.</p>	
<p><i>Adaptations 1: Defining adaptations</i></p> <p>An interactive quiz encourages students to differentiate between different types of adaptation: structural, behavioural or physiological.</p>	Engage
<p><i>Adaptations 2: Emperor penguins</i></p> <p>Students conduct experiments to model structural, physiological and behavioural adaptations of emperor penguins.</p>	Explore
<p><i>Adaptations 3: Barrow Island marsupials</i></p> <p>Students use a learning object to investigate adaptations of four marsupials that live on Barrow Island.</p>	Explain
<p><i>Adaptations 4: Samphires</i></p> <p>A profile diagram of a lake provides students with an opportunity to determine which species of samphire would be mostly likely to survive in particular locations.</p>	Explain
<p><i>Adaptations 5: Diving adaptations</i></p> <p>Students use a learning object to compare and contrast physiological, structural and behavioural adaptations of air-breathing diving animals.</p>	Explain
<p><i>Adaptations 6: Freediving</i></p> <p>Students watch a video of a human freediver and consider differences between acclimatisation and adaptation. Students review risks of diving associated with pressure.</p>	Elaborate