

TECHNIQUES, TRAINING & REVIEWS.

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Hi everyone,

Welcome to my first Techniques, Training & Gear Reviews article for the *SSS Journal*.

I have been told, a few times, that I am a gear freak and should put my knowledge to better use. So, here goes.

If anyone has any particular gear they want info on or would like to provide me with feedback, please shoot me an email at training@sss.org.au.

In this and ongoing pages, I will be covering everything from gear reviews, personal kit setups and training tips, to news on training days and I will provide news from the NSW Cave Rescue Squad, of which I am an active member.

For my first review I thought I could write about the most obvious piece of equipment that everyone uses, Ropes!

ROPES (Photos 1 and 2)

Cavers use Kernmantle static rope. Kernmantle rope is constructed with its interior core (kern) protected with a woven exterior sheath (mantle) that is designed to optimize strength, durability, and flexibility. The core fibres provide the tensile strength of the rope, while the sheath protects the core from abrasion during use. The name is derived from German Kernmantel which means core jacket.

“Static” means the rope has very little stretch, usually about 3%. These are ideal for abseiling and prusiking. “Dynamic” rope is not ideal for caving as it has up to 30% stretch. This is ideal for lead rock climbing as it will help to absorb the forces of a falling climber.

Nine millimetre rope is light and takes up less space in packs than thicker ropes. In large caves, with many pitches, this is a real advantage. Nine millimetre ropes require careful attention though when rigging, so as to make sure there are no rub points. If there are any rub points then eleven millimetre rope is advised, because it provides better abrasion resistance. Otherwise, rope protectors should be used.

The chart below shows the strength of rope in relation to its diameter, although the strength can vary between different manufactures.

STATIC ROPES		
Diameter	Typical breaking strength	Typical weight
9mm	21 kN (2141 kg)	42 g/m
10mm	27 kN (2753 kg)	66 g/m
11mm	34 kN (3467 kg)	75 g/m



Kernmantle Ropes.

Photo 1.

- 1) 11 mm (white/black).
- 2) 11 mm (pink/green).
- 3) 9 mm (blue/yellow).
- 4) 11 mm (yellow/blue).
- 5) 9 mm (red/blue/yellow).
- 3) 11 mm (red/black).

Photo: Chris Curtis.

Kernmantle Rope.

Photo 2.

11 mm (yellow/blue), showing interior core (kern).

Photo: Chris Curtis.



Once a knot is tied into a rope the strength can be significantly reduced. The Figure 8 Loop retains 80% of its strength, the Double Fishermans 79%, the Bowline 60%, the Alpine Butterfly 75% and the Overhand Bend about 50%, to name a few different types of knots. A rope can also lose up to an additional 20% of its strength when wet.

ROPE LIFE AND CARE

The life of the rope has been a big discussion point for many years and there is no clear rule as to when to retire a rope. If ropes are stored out of the sun, kept dry and looked after, they should last for many years. In my opinion, I would retire ropes once they get to about ten years old.

Ropes should be checked before and after each outing. If a rope is showing signs of major wear along its length it should be retired or, if it has the core showing, the rope must be cut at the wear point.

Do not stand on ropes. This can cause cuts to the sheath and push grit into the rope, which causes internal abrasion further reducing the life of the rope.

In future articles, I will go into knots in more detail and also into how to look after and store ropes.

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