

## Stuck In The Woods

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# Fallen Hiker

### Fallen Hiker

What to do when a hiker falls off the trail. This course concentrates on four aspects of a fallen hiker situation.

- Risk assessment and a plan of action.
- Skills training without ropes.
- Ropes and knots as tools.
- Rope-working skills including safety-line belays.

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#### Disclosures and rules

I am not professionally trained or certified in anything, so learn at your own risk

I am not sponsored by any organization, so don't blame them for what I teach

I teach in concepts and understanding.

If you don't understand, you won't remember.

If you don't understand, then I'm not doing my job....ask more questions.

I teach rules of thumb. They apply only 99 percent of the time

Rules can be broken only if you understand why you need to break it and accept the consequences

Before you disagree or ignore what I teach, have the patience to listen and understand the reasoning behind it before you make up your mind.

What I teach is not absolute. You can change it to suit your needs.

There is no "the only right way".... It all depends on circumstances

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# Fallen Hiker – Assess Situation

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The skills covered here are not standard rock climbing skills. If you need them, learn elsewhere.

Presuming that you will neither remember nor practice much after the course:

- Only the most basic skills are taught
- Only the minimal resources will be used
- Only simple techniques will covered
- Improvisation, versatility and adaptability will be emphasized

Assessing the situation after a hiker falls:

If there are major injuries or unconsciousness:  
Call 9-1-1 and wait for the rescue squad  
If needed, send down first aid supplies

If the hiker is in an unsafe or unstable position:

Have the hiker move to a more stable position.  
Lower a rope down – or send someone down to stabilize the hiker.  
If it is too hazardous, call 9-1-1 and wait for the rescue squad

If there are no major injuries:

If needed, send down first aid supplies  
Able to climb up/down easily – do it  
Able to climb up/down, but may need protection (rope)  
Need help to climb up/down  
Only if it safe to send someone down to help  
If it is too steep or hazardous, call 9-1-1 and wait for rescue squad

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## Fallen Hiker – Response

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Factors to consider:

- Injuries / consciousness
- Time-critical injuries such as heavy bleeding, etc.
- Hiker’s capabilities
- Time of day
- Weather
- Personnel resources (helpers)
- Experienced helpers (climber, belayer)
- Supplies (ropes, etc), first aid supplies
- Safe work platform, anchor

Other considerations

- Do no harm – do not worsen the situation
- Know your limits of knowledge, capabilities, experience
- Stop, think, observe and plan before acting (S.T.O.P.)
- Assess risk vs. gain (low/low, low/high, high/low, high/high)
- Assess the supplies available (ropes, etc.)
- Assess number of helpers, skill level, knowledge
- Double check everything, especially knots, anchors, etc.
- Have someone gather information (see below)

Gather information

Have someone record on paper:

- Date and time of fall
- Location (GPS coordinates would be nice)
- Name of hiker
- Gender
- Age
- Phone contact / home
- Injury, if any
- edical/physical disabilities/needs
- Witnesses
- History of event (what happened)
- Time of 9-1-1 call (if any)

- As needed:
- Contact family
- Contact organization responsible party

If unable to contact via cell phone or radio:

- Send at least two persons out (in case one get hurt)
- Send a copy of info sheet with them
- Ensure they have appropriate phone numbers (and coins)
- Ensure they can return (mark trail, etc.)

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## Fallen Hiker – Climbing Skills

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### Skills – Basic climbing skills

Maintain 3 points of contact. Two feet, one hand – or – two hands, one foot  
Keep the center of gravity over your feet to prevent slipping  
Use edge of boot to dig in to create a small platform for support  
Use flat foot to maximize friction for a good grip

### Finger to Finger Grip

Gripping the other’s fingers or Finger to Finger Grip depends on both grips not to fail.  
If one fails, the hand can slip through the other hand, especially if one hand is sweaty or tired.  
There is no jamming effect.**DO NOT USE this technique.**

### Bucket Hand

When you reach down to help, form a Bucket Hand by keeping your fingers together, curl the four fingers to form a “J” with the thumb pressed against the side of the palm.  
The other person reaches up and forms a bucket hand in reverse and “hooks” his hand into yours.  
The advantage is the hands are less likely to slip or open under pressure. Both persons must know the skill.

### Acrobatic Wrist Grip

This acrobatic grip combines the strength of both persons.  
Each person holds onto the wrist of the other person, essentially jamming the circled hand against the fist of the other. It is more reliable because if one fails, the other still holds.  
Say “**grab my wrist**” and cock your hand out to expose your wrist to the other person

At some point, you may have to decide whether to go to the fallen hiker to provide aid.  
Should you go?  
Factors to consider.  
What is the risk / gain ratio?

Do you or someone else have the experience / skills to provide aid?  
Do you or someone else have the experience / skills to climb safely?  
Do you have an available belayer for fall protection?  
Do you have the necessary tools/supplies (ropes, etc.)?  
Do you have the knowledge to use the ropes safely?

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## Fallen Hiker – Using Rope

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### Rope

Material – Nylon/Dacron (polyester)  
Diameter – ¼ to 3/8 inch / 6 to 9 mm  
Type – braided/kern mantel/tape (5/16 inch or more)

Strength should be 2,000 lbs (9 KN) or more. (FYI: 1 KN = approx. 225 lbs); working strength is 1/5th of the maximum strength  
Length 20 feet or more (30 feet of 5/16" web would weigh approx 9 oz)

**DO NOT use cotton** clothesline, **polypropylene** (slick, often yellow), fuzzy rope.  
Cotton, hemp, sisal, jute, manila, polypropylene, polyethylene are much weaker than either Nylon or Dacron.  
Fuzzy rope is usually made of short fibers which break much easier.

**DO NOT** use “super” fiber ropes such as Kevlar, Spectra, Dyneema, Technora, etc. These are much stronger than Nylon, but tend to not hold knots well, and break fibers when flexed too often. Wonderful stuff, but it has too many potential difficulties for a basic user.

**DO** use climb-rated ropes.

**Safety Rope Use** (Safety Line, “Pro”(tection))  
This is the most frequent use of a rope.  
Tie the rope around an anchor (tree, etc) using a girth hitch, rewoven figure-eight, bowline, etc.  
Toss rope down to use as an aid for climbing up.  
Wrap rope around forearm and grasp with hand to increase friction and reduce slippage.

**Tossing the rope** (heaving)  
To avoid snags and tangles, start at one end, pile the rope loosely on the ground by running it through your hand untangling as you go.  
To toss, do not coil the rope. This will cause a spiral tangle.

Form large zigzag loops back and forth (Z-folds) in the throwing hand.  
When you have enough rope in hand, toss it straight out away from you so it falls out and down to the target. The rope will fall without tangles or snarls  
Be sure to anchor or hold onto the other end of the rope.

**Knots** (see [Fallen Hiker Knots handout – pdf](#) )  
Rule: easy to tie, does its job, easy to untie. Better to know one knot well.

**Overhand knot** – the basic knot – can jam under load.  
**Figure-Eight knot** – overhand knot with a twist. – Easier to untie. Overhand around a rope  
**Fisherman’s Knot** – the “gold standard” to join ropes / even for different diameter ropes.  
Reliable, strong, can’t slip – similar to wrist-to-wrist grip Tie each rope with an overhand around the other rope and pull tight  
**Double Fisherman’s Knot** – tie with overhand wrapped twice.  
**Girth Hitch** – simple hitch around an object  
**Munter Hitch** – high friction knot for belaying  
**Bowline Knot** – is hard to remember for casual users. Better to use a rewoven FigureEight Knot.  
**No Square Knot** – it can fail if the tail is pulled or caught.

**Join two ropes** with a Double Fisherman’s Knot.  
**Form a loop** with a Figure-Eight Knot on a bight or reweave it.  
Always leave a long tail 4 inches plus or tie a security Overhand Knot.

**Rope usage**  
Form 6 inch loops at both ends of rope –with overhand or figure-8, leave 4 inch tail Large enough to slip a hand through

Join 2 loops by slipping first rope loop over second rope loop, then threading first rope end through second rope loop or join 2 ropes with a Double Fisherman’s Knot  
The end loop can be used for hiker’s wrist  
Anchor – around tree – use Girth Hitch or Figure-Eight

**Belay** – control a line tied to climber for protection against falling  
Belay around tree – simplest  
Body belay – around body – last resort – friction burn  
Maintain a stable position. Sitting is safer.  
Tie loop around tree – clip carabiner to loop – use Munter Hitch.  
Use Munter Hitch to add friction to prevent a “run” on the rope.  
**Never** let go of the rope at any time – always keep one hand on rope.

**Harness** – tie around climber for protection and belay  
Simplest is rope/web around body – can slip and hurt.  
Diaper seat – Seat sling – reduce slippage – around body and legs. Made from 8-10 feet web tied in a loop with fisherman’s knot

**How to use a harness seat:**  
Place knot in back.  
Pull left, right, to front, form loops and hold.  
Pull rest between legs to front, forming a diaper. Thread bottom part through the left, right loops.  
Snug up and tie bottom loop (over left, right loops) to itself, locking all three parts together.  
Attach another rope to bottom loop using a rewoven Figure-Eight Knot. Or use locking carabiner.  
Test for close fit.  
Slide back loop high up on waist for balance

**Carabiner**  
Useful, but not essential  
Use only screw-locking carabiner. Simplest mechanism.  
Always lock the carabiner

Use only a climb-rated carabiner rated at 4000 lb (20 KN) or more  
Typical lock carabiner weight – 2.5 to3 oz. (75 – 90 grams)

**Aid roping.**  
Using rope as a step  
Secure rope/web belt around waist  
Thread rope with loop down under belt,  
Wrap rope from inner thigh, back of leg, front of shin to feet  
Attach to feet using Girth Hitch around instep  
To use, raise foot, take up rope, step up and reposition body  
Repeat  
You can use two aids to act like left-right steps.

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## Fallen Hiker Knots



Overhand Knot - the basis of many knots



Fisherman's Knot – an overhand tied to the other rope

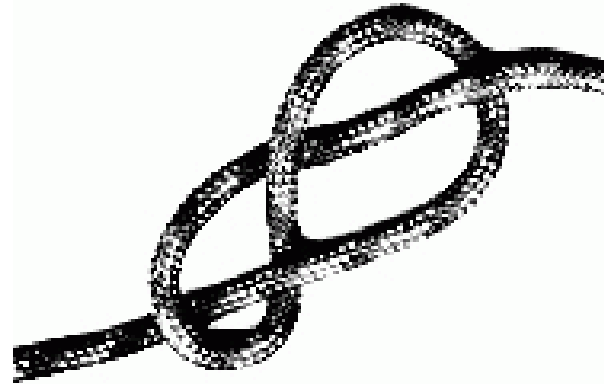
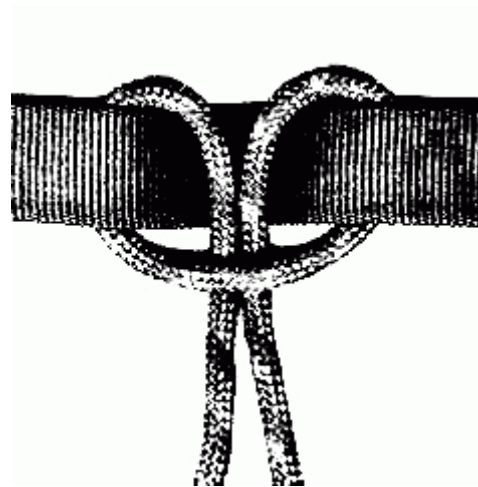


Figure Eight – an overhand with an extra twist  
– much easier to untie

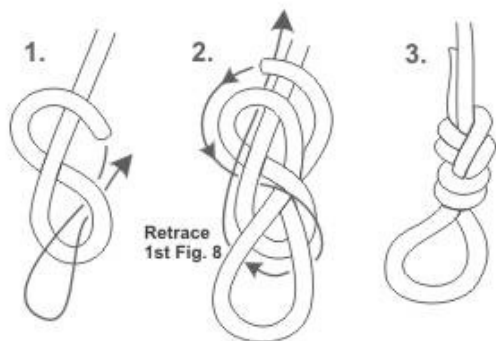


Girth Hitch – quick knot to tie to something –  
quick to untie

## FIGURE EIGHT

The Figure Eight Follow-through is one of the strongest knots. It is generally rated at 70% - 75% of rope strength. Due to its strength and the fact that it is easy to visually inspect, it is commonly used by climbers as their "tie-in knot" - the knot that connects the climber to the rope.

It forms a secure non-slip loop at the end of a rope. For even greater security, finish the tag end with a backup knot such as one side of the Double Fisherman's.



This knot can also be tied by tying a Figure Eight Knot with doubled line at the end of a rope (Fig. 1. with doubled line and don't come back through bottom loop.) It is faster but cannot be used if tying onto a fixed object. A single Figure Eight also makes a good "Stopper Knot" at the end of a rope.

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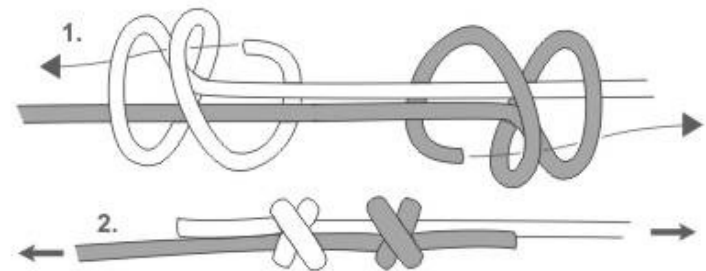
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Double fisherman's Knot – wrap overhand twice before pushing it through. A strong and secure knot to join two ropes. The “gold standard” of joining-type knots.

## DOUBLE FISHERMAN'S

The Double Fisherman's Knot securely ties two ropes together or can be used to tie the ends of rope or cord together to form loops.

Another use for this knot is to make another knot more secure by tying this knot with the tag end of the rope behind another knot, a practice common to mountain climbers. In that case, you are effectively tying one half of the Double Fisherman's around the standing line of the other knot.



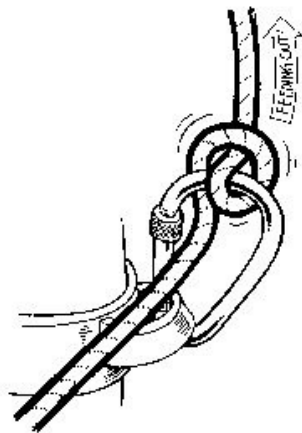
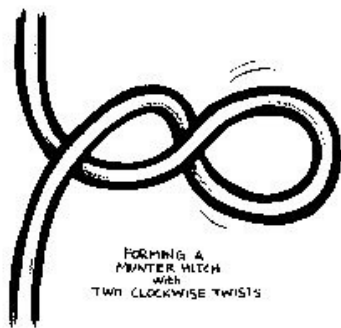
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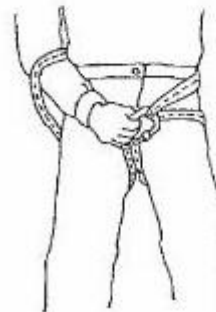
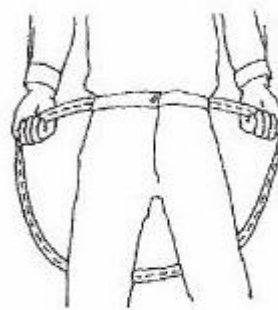
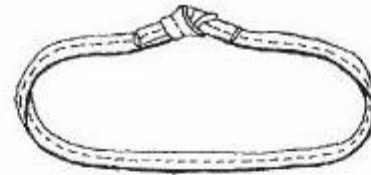
Figure Eight Knot on a Bight -0 quick way to form a loop – easy to untie.

## Munter Hitch

Step 1 – 2 - 3

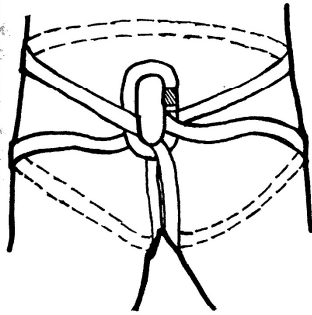


Munter Hitch – used as a friction knot for belays

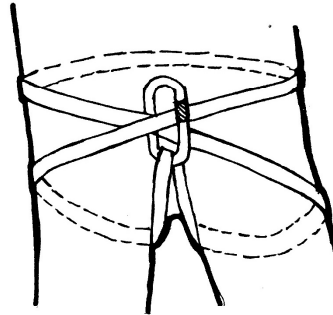


How to form a Diaper Sling from a 10 foot webbing loop

# SIT SLINGS



DULFER SEAT



DOUBLED SIT SLING SEAT

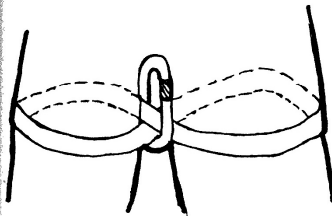
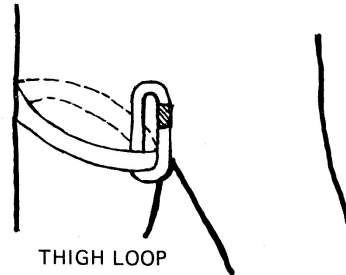
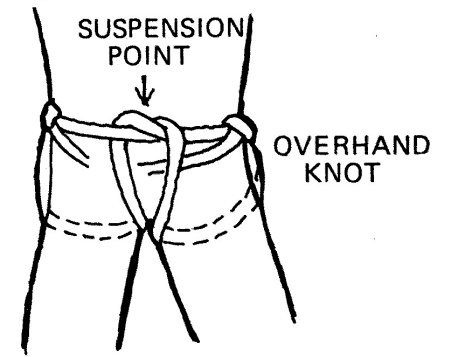
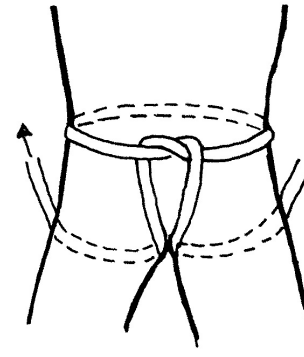


FIGURE OF EIGHT SEAT



THIGH LOOP

# SEAT HARNESS FROM A SWAMI BELT



(i) TIE AN OVERHAND KNOT AND PASS ENDS BETWEEN THE LEGS AND AROUND BUTTOCKS

(ii) TIE ENDS INTO WAIST WITH OVERHAND KNOTS AND THREAD THROUGH FRONT TAPE. TIE ENDS TOGETHER WITH TAPE KNOT

How to tie a seat harness using a 12 foot webbing (or rope)