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Climbing, Crossing, and Descending Techniques

1. Setting the Rope

In rescue operation, when lowering people down walls or wells or when evacuating people from inside collapsed buildings, the rope must be descended or climbed vertically. Further, when setting the rope between a collapsed building and an adjoining building, or suspended it between a river bank and a dry point on the river bed, a rope bridge must be crossed, etc.

(1) Setting of Hanging Rope

① Selection of Position

a. Factors for selection

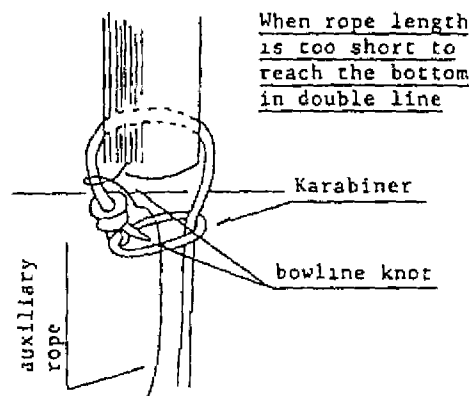
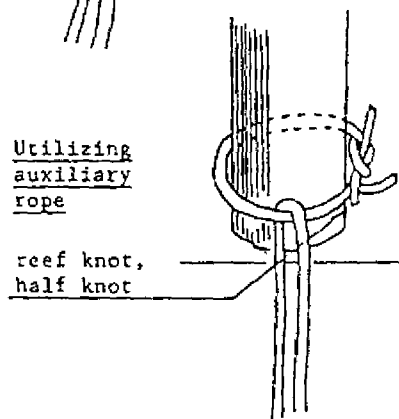
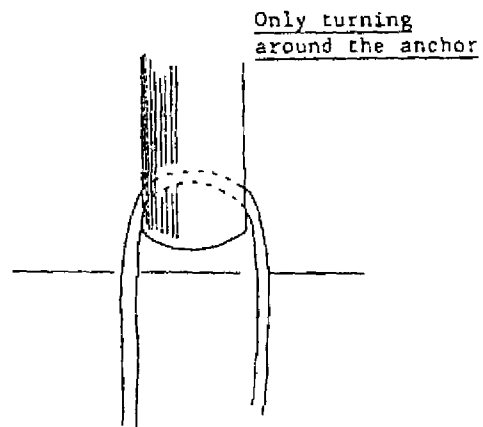
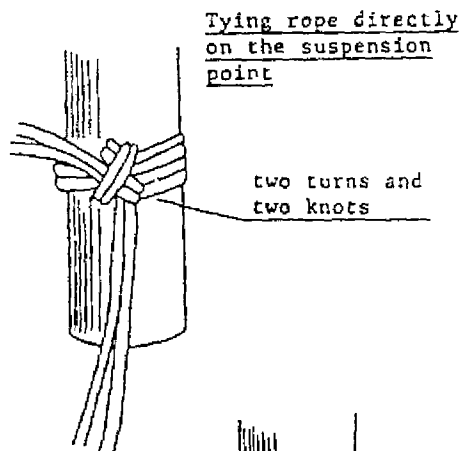
- (a) Suspension point shall be solid and firm.
- (b) Descending route shall be of few openings and smooth.
- (c) Do not use such a place where soil may collapse and danger is feared.
- (d) Rope shall have a length reaching to the bottom (destination of descending).
- (e) Suspension point shall be found or already installed.

② Method to Hand Rope

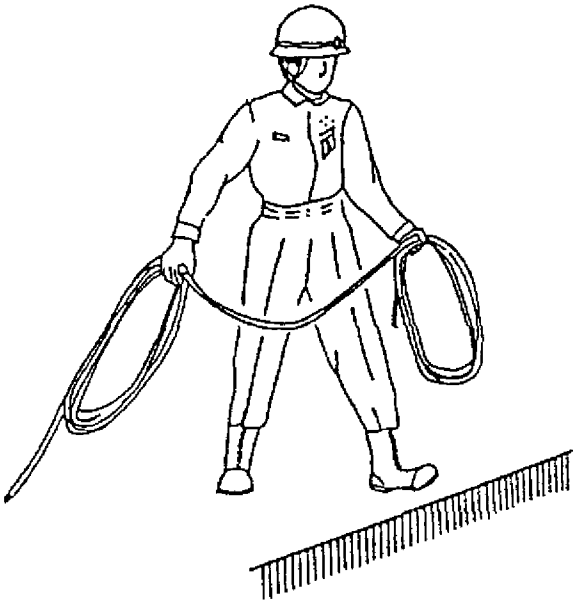
a. Requirements

- (a) Use rope in double lines to reduce pain to the descender as a rule.
- (b) Adhere rope securely.
- (c) When suspension point is feared somewhat unstable, secure the rope also to another anchor using excessive length.

[Methods of hanging]



Method to Throw Rope



[Procedures]

Tie one end of the rope on the anchor.

1. Divide the rope into two coils of about half of the length each and hold a coil in each of the hands. Brace the legs with a width of about 1 m.

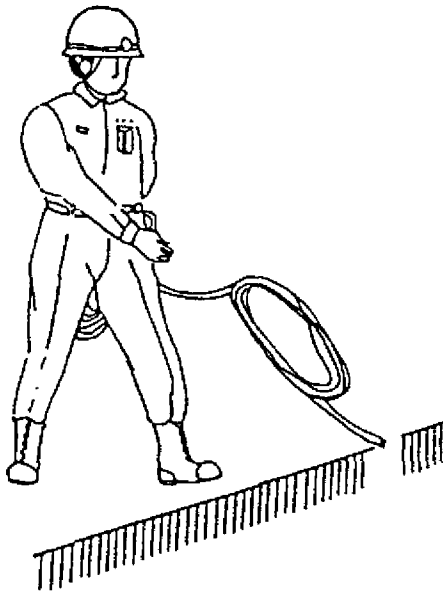
Ejaculate loudly "Rope!" to warn persons below.

Do not be in the coil in throwing.

2. On receiving their response "Yoshi (all right)," throw coils in the due order in under-handed throwing.

[Cautions on training]

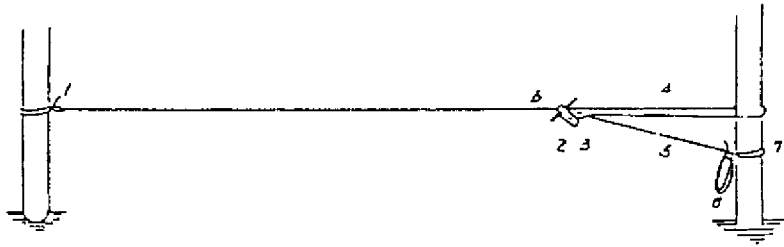
1. Foothold shall be such that does not instabilizes body balance at any time. (Take care that rope thrown down does not touch the body at the moment it gets taut in the span to an anchor.)
2. Self-securing shall be done at an unstable place.



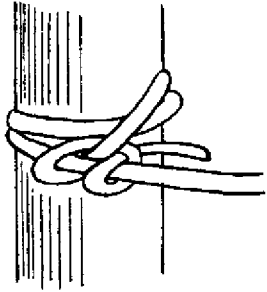
3. For a case of the first experience;
 - a Swing the both hands holding the equal half of the rope each back and forth with a timing of "one, two."
 - b With the timing of the swing, throw the rope as the hand swings forward as "one" and nextly the other hand as "two" successively.

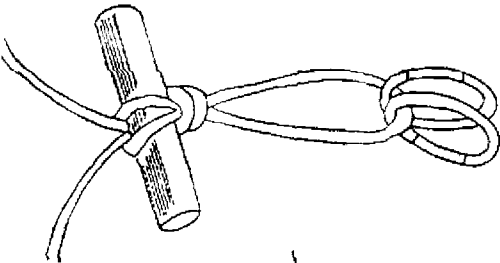
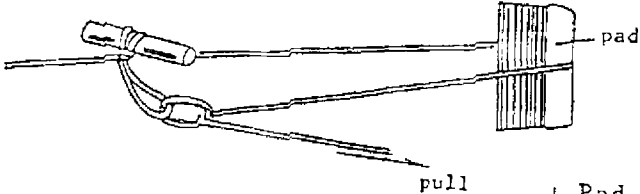
Setting a Line of Rope Bridge

I Setting Procedures



Rope shall be double but that extended one by one.

| Setting procedures | | | |
|--------------------|--|---|--|
| Order of setting | | Explanation | Relating knowledge |
| 1 | <p>Tie one end of the rope to the anchor.</p>  | <p>Finding or installing suitable anchor, tie the rope with two turns and two knots method.</p> | <p>For the purpose of protection for the rope, place pad on the anchor. When hard cloth can not be got, use waste cloth, magazine, newspaper, etc.</p> |
| 2 | <p>Make a bowknot with the rope.</p> | <p>Make it at about one third of the span..</p> | <p>The position shall be determined considering elongation and contraction of the rope. New nylon rope will be elongated by about 50%.</p> |

| Setting procedures | | | |
|--------------------|--|---|--|
| | Order of setting | Explanation | Relating knowledge |
| 3 | Attach Karabiners and a bar to the bowknot.  | Hang two Karabiners through the loop of the bowknot and insert a bar into the knot. | The reason of using two Karabiners is safety. In hanging the two Karabiners, gate sides of the two shall be so placed to be in opposite direction each other. The function of the bar is to prevent so much tightening of the knot accompanying rope's elongation as to be hardly possible to undo the knot. |
| 4 | Turn the extended rope around the anchor on the opposite side and pass it through the two Karabiners attached to the bowknot.  | | This is a method for tensioning the rope enough. Pad the anchor to prevent damaging rope. |
| 5 | Pull the rope. | Pull the rope that has been passed through the Karabiners. | To exert sufficient force in pulling the rope, about ten persons are required. (1) Pull the rope in concert and once for all. (2) Do not hold the rope near the Karabiner. When the rope retreats, the holding fingers are feared to be pulled back to get between the rope and the Karabiner. |

| Setting procedures | | | |
|--------------------|---|--|---|
| Order of setting | | Explanation | Relating knowledge |
| 6 | Check the tension. | When the rope is thought to have been tensioned, tap it with a Karabiner or something. If the impulsive wave reaches anchor on the opposite side quickly and comes back again, the tension is all right. | A person will get accustomed to the rope stringing work as experiences are repeated. |
| 7 | Tie the rope. | Pad the anchor at the place the rope contacts. Tie the rope there in two turns and two knots method or transportation knots. | Transportation knots are made at the Karabiner. Make it quickly or the rope will get loose. |
| 8 | Treat the excessive end length of the rope. | Wind it in a small coil to hang on something suitable. | Keep working floor always arranged for the sake of danger prevention. Do not stamp rope. |

After finish of all the works, bind the both ends of the rope with small rope in purouzie knots.

2. Methods of Securing

(1) Definition of Securing

Securing is the securing of a stable stance by a member of a fire fighting squad in a high place or a place where it is difficult to secure a stable foothold, in order to facilitate operations which are potentially dangerous, such as climbing, descending, or rescuing someone in need of rescue.

(2) Safe Stance

The prerequisite to securing is the establishing of a safe stance by the squad member. This not only involves the center of gravity but also the scope of movement of the squad member involved. In theory, the lower the center of gravity the greater the stability, however, conversely, the lower the center of gravity the more movement is restricted. One will be sacrificed at the expense of the other depending on the particular situation.

Details

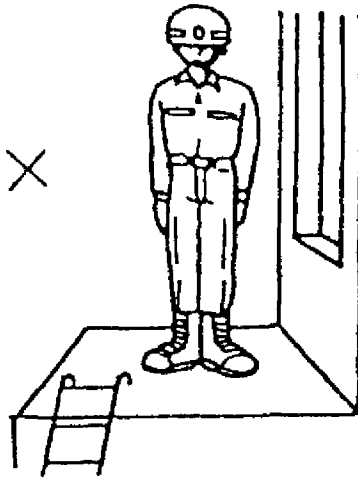


Figure 3-106-1

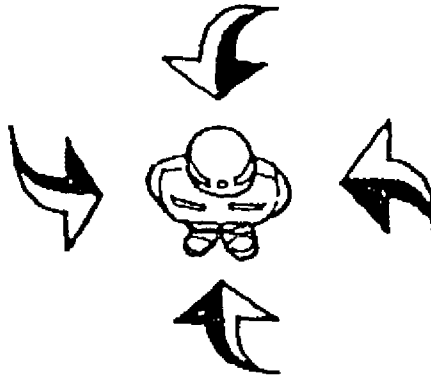


Figure 3-106-2

a. Safe Stances in High Places, etc.

In places where there is a danger of falling, etc., it is not necessary to assume an upright or formal position (please see Figure 3-106-1).

Although it may seem more orderly to assume an upright position, this is in fact extremely dangerous and unstable due to the fact that the body is vulnerable to pressure from any direction as shown in Figure 3-106-2.

In the same way, a stance such as shown in Diagram 3-107-1, where both feet are placed on the edge of a place where there is a danger of falling, is unstable and vulnerable to pressure from behind.

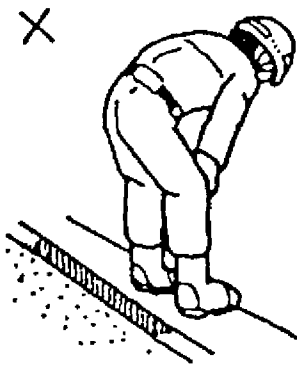


Figure 3-107-1

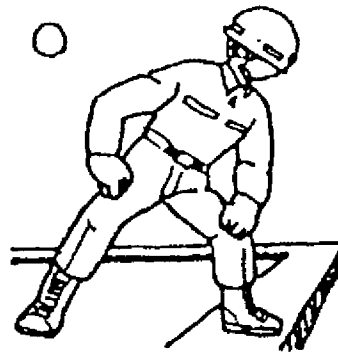


Figure 3-107-2

In this kind of situation, it is essential to take a stance whereby the legs are placed apart either before and behind or to the left and right. It is also important to brace yourself with your knees in such a way that it is possible to maintain a stable stance even in the event of something sudden and unexpected occurring (please see Diagram 3-107-2).

b. Rest Position

When waiting in high places, it is preferable to relax and assume a comfortable position, such as sitting down or placing one knee on the ground and maintaining a low profile (please see Diagram 3-108).

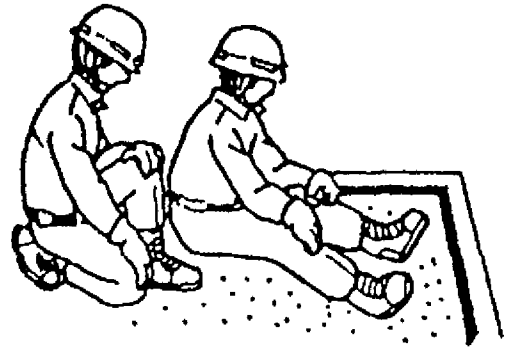
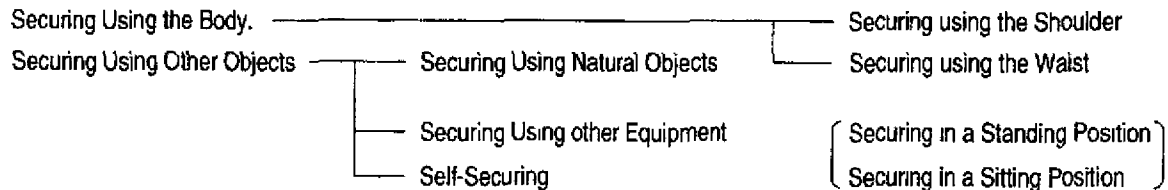


Figure 3-108

(3) Types of Securing

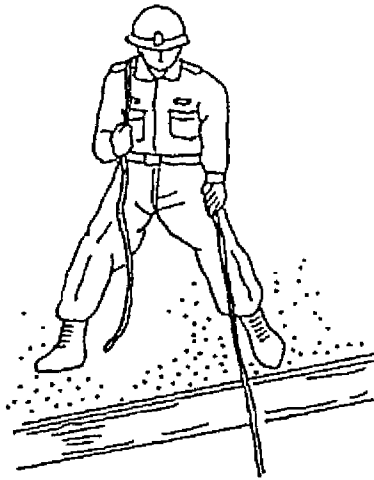
Types of securing can basically be broken down into those involving the body to secure and those involving other objects to secure. Securing involving the body is used when there is absolutely no other object available to utilize.

These two types of securing can be further categorized as shown below.



Anchoring with body

① Securing by Shoulder



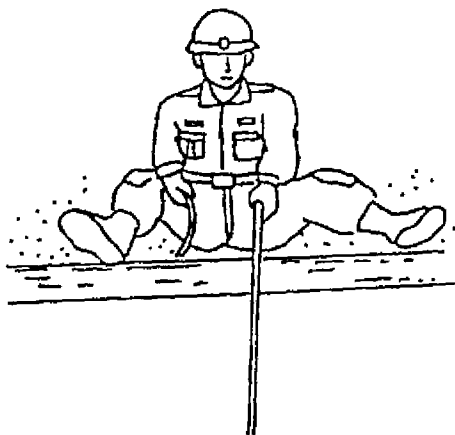
[Procedures]

1. Take the securing rope at right (left) underarm.
2. Turn the rope to on the left (right) shoulder via the back.
3. Hold the rope with left (right) hand in front of breast.
4. With right (left) hand, hold the down-going rope at the front of right (left) thigh.
5. Place the left (right) foot a step backward and take a posture with straight line of the backbone.

[Cautions for training]

1. Securing by shoulder is adopted when usable area is small and secured load is at a level lower than the waist of the securer.
2. Securer should face to the secured person and set the foot positions so that the maximum retention can be obtained.
3. Straighten waist and knees so lightly as to retain elasticity.

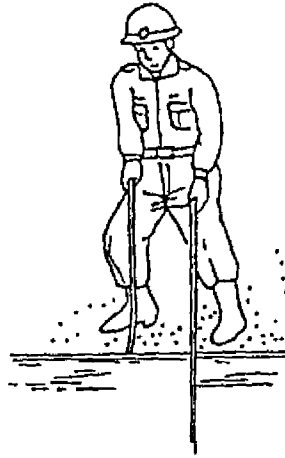
② Securing by Waist



[Procedures]

1. Hold securing rope with right (left) hand near the right (left) thigh.
2. Turn the rope around the waist.
3. With left (right) hand, hold the rope at about the left (right) belly.

③ Standing securing

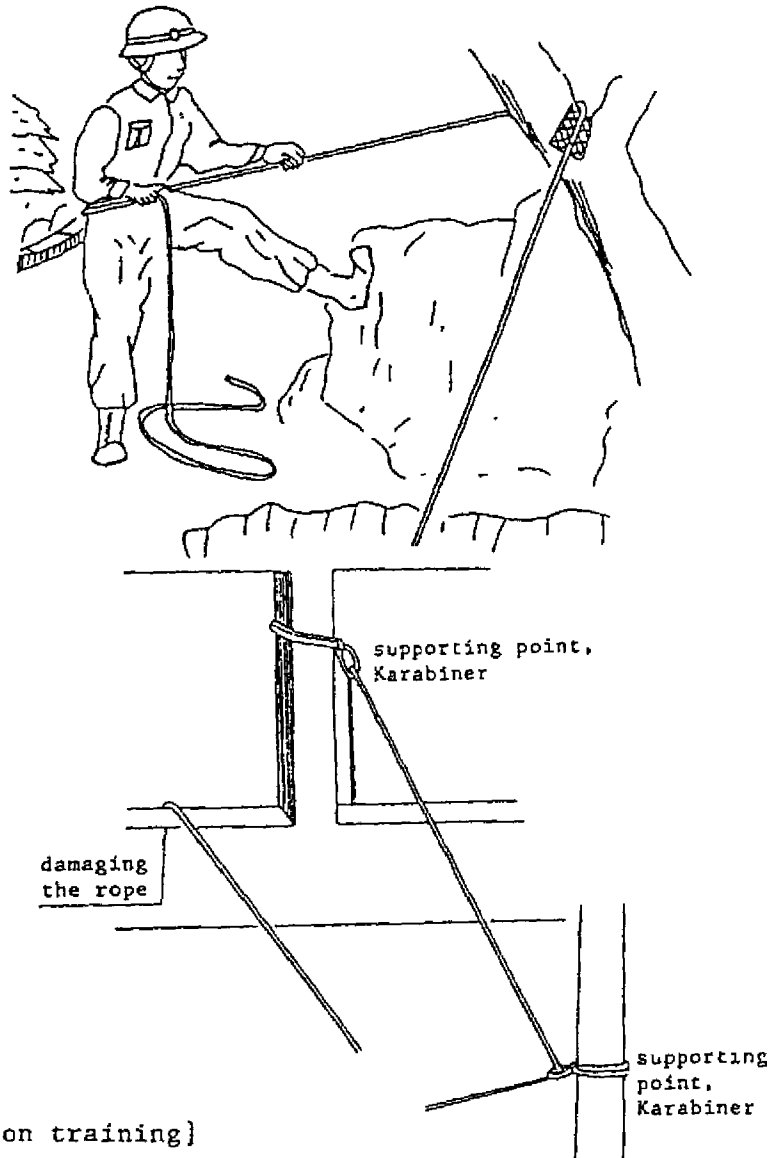


[Cautions for training]

1. Waist securing includes sitting and standing methods.
2. Sitting posture increases assuredness. (In a case that large area is obtained, sitting securing is recommended.)
3. In the case of sitting;
 - a. open legs in the form of fan.
 - b. stretch the legs against a suitable support.

① Utilizing Natural Things or Something

Depending on the place where the securing is needed, existing things and matters may be useful to secure the object safely and easily.

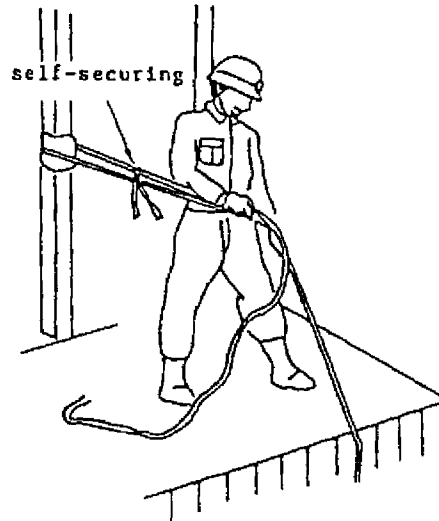


[Cautions on training]

1. In a case securing utilizing supporting thing, take securing posture against the supporting thing as the shock by dropping or something comes via the support.
2. In a case that the load is too large to withstand, increase supporting points using small ropes, Karabiners, etc.

② Self-Securing

The method secures the securer himself using rope. This method is executed when a suitable supporting thing is not obtained, available area is too small to secure the object stably or stronger securing is required.



[Cautions on training]

1. Self-securing shall be executed whenever possible.
2. Considering that self-securing cannot be executed, this method shall not be the only one to be relied upon.

Self Securing

Waist-harness rope-supporting method

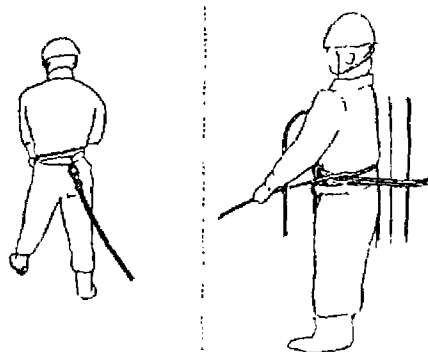
This method is used when there is a large distance between the securing position and the position of the ground object, which provides an anchor point, or when this object is large.

After attaching a small line to one end of a rope, tie the small line to the ground object to anchor the rope. Move to the securing position and tie the other end of the rope to your waist belt.

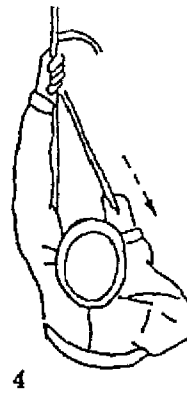
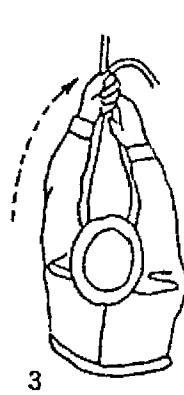
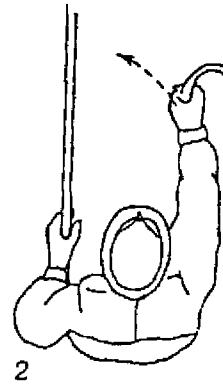
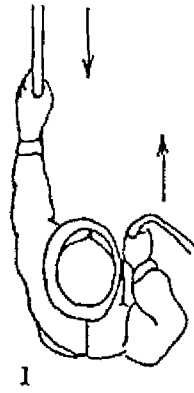
Direct anchoring method

This method is used when the securing position and the position of the ground object, which provides an anchor point, are close together.

Face the ground object and stand right in front of it, holding a small line with an end in each hand. Slip the line over your head, sliding it down to waist level at the back. Pass the left (right) end of the line around the ground object and catch it in your right (left) hand, while passing the other end to your left (right) hand. Turn around clockwise (counterclockwise), and tie the two ends together in front of you as shown in the sketch.

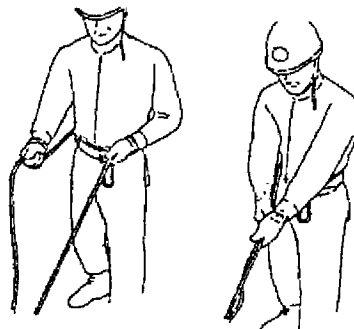


Operation of Securing Rope



[Cautions on training]

When handling rope, the both hand shall surely be on it.



Training of Falling

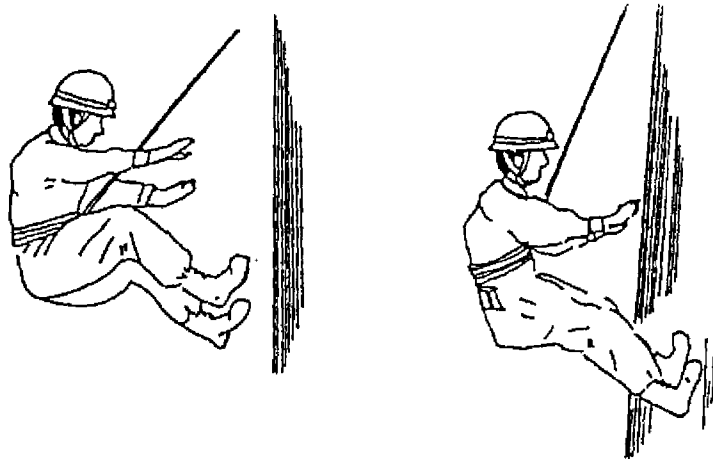
The purpose of this training is to let the trainee acquire safe and basic posture in falling by mistakes in climbing or descending and practical technique of securing as well.

[Procedures]

| Order | Leader | Securer | Descender |
|-------|--|--|--|
| 1 | "Kakuho Yoi! (Ready to secure)." | Hold the securing rope untied and take posture for secur- ing. Give a sign that "Junbi yoshi (Ready now)." | Turn an end of rope around belly and tie in bowline knot. In coordination with securer, go out to the wall surface and take posture for descending. Give a sign, "Junbi yoshi (Ready now)." |
| 2 | "Hajime (Start)." | Responding to the descender's sign "Rope yurume (Loosen rope)," recite "Rope yurume (Loosen rope)" and loosen the securing of rope. | Giving a sign "Ropé yurume (Loosen rope)," descend corresponding to the operation of the securer and giving the sign "Rope yurume (Loosen rope)." |
| 3 | "Yoshi kakuho toke (OK. Release from securing." | Release himself from securing and arrange the rope. | "Touchaku (Reached." Release himself from the securing rope. |

[Cautions for training]

1. Completely tie the securing rope of descender.
2. As for the descender;
 - (1) Do not strike the knee against the wall.
 - (2) Keep the body bent so as not to strike the belly against wall.
 - (3) Warping himself too much will hang him reversed upside down.
 - (4) Bend the body at the waist and step the wall with soles flatly buffering the impulse by bending knees.



3. Climbing Procedures

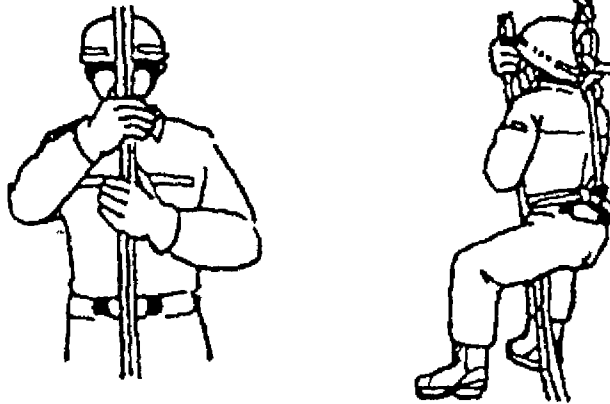
The method is to trespass climbing a wall by setting a suspension rope. Such cases may be encountered on an occasion that one must return to the original position after descending once or that one climbs utilizing a line of rope suspended from above. Methods include climbing using only the arms, purouzie climbing, and footlock climbing.

(1) Rope Climbing

Climbing using only the arms is a method used only for climbing at relatively low heights.

Procedure

1. The person climbing faces the wall and uses both hands to climb up the rope.



2. The entire body weight is supported by the climbing rope and the position of the hands.
3. When both feet are on the ground in a state of readiness, the climber pulls each hand in turn down in front of the chest using only the strength of the arms. In this case, the elbows are bent slightly inwards and the arms kept close to the body.

4. The eyes are fixed in the direction being climbed and the rope pulled and squeezed inwards with the wrists turning inwards in order to proceed up the rope.
5. The legs are slightly bent and either scrape against the wall or are placed slightly apart and kick the wall alternately.

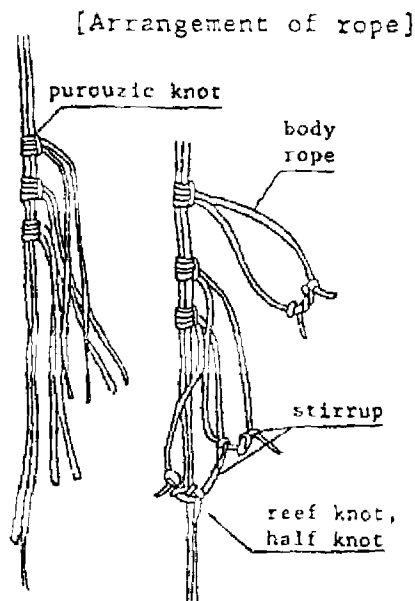
Notes.

- a. When climbing, it is important not to let go with the hands. As the entire weight of the body is being supported by the hands, the rope must be gripped securely at all times.
- b. Do not fully extend the arms as this can increase fatigue.
- c. A securing rope must always be attached to the climber.

(2) Purouzie Climbing

The method is employed when climbing height is so long that arm's force only is not enough on such an occasion one must climb again using suspended rope from a place to which he has once descended or that one climbs by rope suspended from above.

① Preparation



[Procedures]

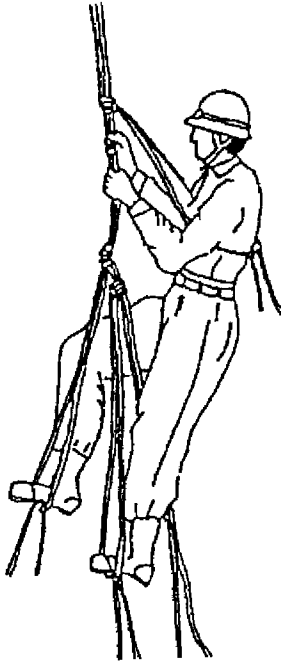
Prepare three lines of small rope other than suspended rope.

1. Tie the lines of small rope at their center to suspended rope with purouzie knot.
2. Joint ends of the small ropes in each purouzie with reef knots ensured with half knots.

Adjust the size of the loop to make the upper one loop the body rope and the lower two the stirrups.

② Method of Climbing

[Figure]



[Procedures]

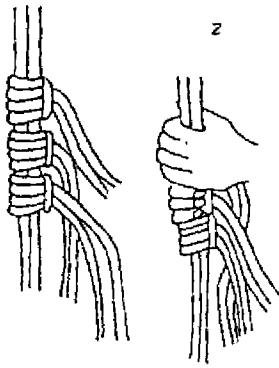
1. Climber shall put his body in the body rope prepared in 1 .
2. Step on the stirrups prepared in 1 .
3. Brace the both legs to put weight on the stirrups, and, at the same time, pull the rope with arms to lift the body.
4. Slide the purouzie of the body rope now floating free upward.
5. Put body weight on the body rope brought upward and the two stirrups.
6. Slide the purouzie of a stirrup now floated free upward.
7. Putting weight on the body rope and the stirrup brought upward, slide the remaining stirrup upward.
8. Climb repeating the procedures described above.

[Cautions]

1. When sliding the purouzie, hold the suspended rope at below the knot with the other hand.
2. Size of body rope loop or stirrup loop shall be adjusted for the climber.
3. Keeping taut the rope at the lower end will make climbing much easier.

③ Method of Descending

[Descending]



[Procedures]

1. Gather the three purouzie knots together.
2. Hold the purouzie knot for the body rope with the both hands.



3. Putting weight on the both hands, descend all at once.

(3) Footlock Climbing

① Method I of Footlock Climbing

[Procedures]

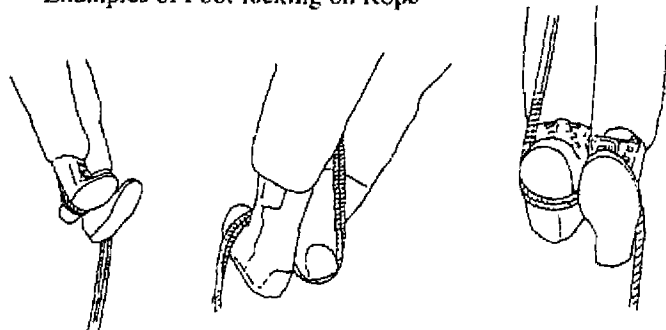
1. Holding the rope with both hands, pull the body up. And, putting the rope on the instep of a leg, bring the other leg crosswise in front of the first leg so that sole of the shoe presses the rope.
2. Put the body on the rope and stabilize it by pressing the rope between the sole of the shoe and the instep of the other leg.
3. From this condition, extend the both hands full upward, and hold the rope to secure the body. After that, loosen the feet to repeat the step 2 above.

[Cautions]

1. The upward extending of both hands shall be exercised after securing the body completely with legs.
2. Keeping the rope taut at the lower end will make climbing much easier.
3. When to descend, loosen the legs only a little instead of releasing freely to descend slowly.



Examples of Foot-locking on Rope

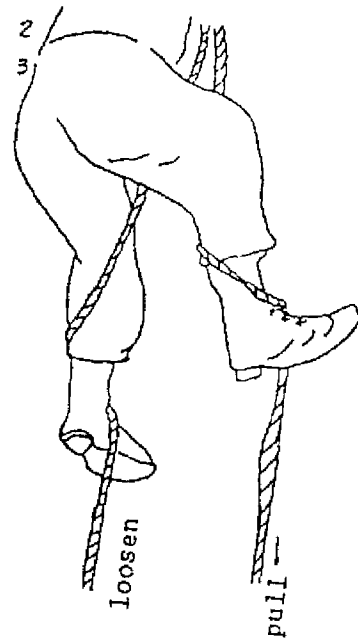
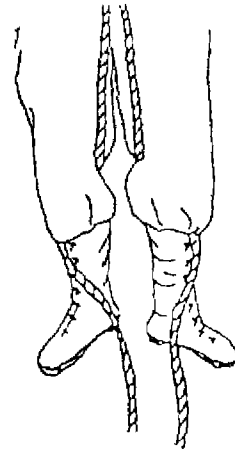


② Method II of Footlock Climbing

[Procedures]

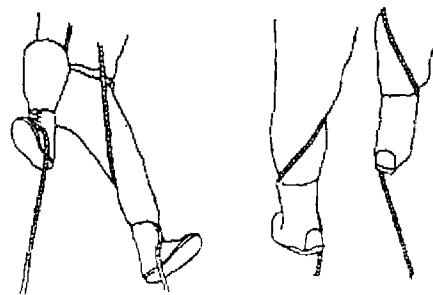
1. Stand facing the rope. Pull the body up holding rope at above with the both hands. Turn a line of rope one turn around the right leg from inside to outside, and the other line around the left leg in the same way.
2. Pull the body up holding the two lines of rope with the both hands. Touch toes on the wall and move the leg upward one at a time and alternately right and left, thus climbing the rope.
3. An assistant shall hold a line of rope in each of his hand at the lower end of the rope. Loosen the line on which the climber moves his leg and pull the line on which the climber fixes his leg.

[climbing]



[Caution on Exercise]

1. Holding two lines together in hands, move hand and leg alternately.
2. Climber should give signs "Migi (Hidari) (Right (Left))!" And, the assistant operates the rope accordingly.



4. Descending Procedures

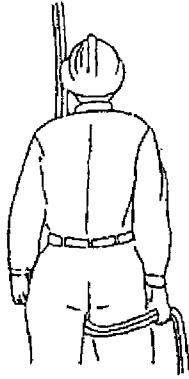
(1) Body Suspension

The method is to descend along suspended rope turning it around the body to secure stability. It is easily exercised requiring no other material.

① Shoulder Catching

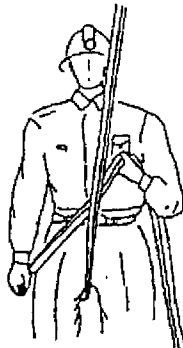
a. Method to turn rope

[Procedures]



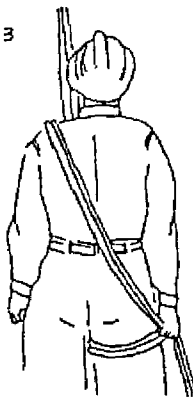
1. Face to the rope and step it over. Hold the rope on the back side with the right hand.

2



2. Take the rope to the front side from the right hip, and pass it diagonally to the left shoulder.

3



3. Down the rope on the back side from the left shoulder to right side.



4. Hold the rope lowered to right side with the right hand in such a way that thumb is underside and middle three fingers are inserted between the two lines of rope.

Note: Insertion of the middle three fingers between lines of rope is for prevention of twisting.

b. Method of descending

[Procedures]

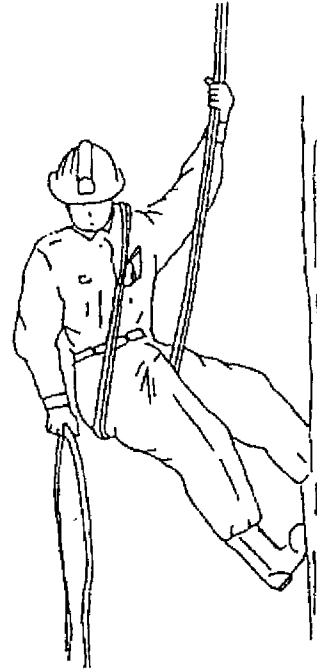
1. Hold the rope with the left hand at above with lightly straightened elbow.
2. Touch the wall with the sole flatly.
3. Keep the leg nearly normal to the wall.
4. Keep the upper body parallel to the suspended rope.
5. Keep the eyes down the position to reach.
6. Keep the right foot a little lower than the left.

After taking the posture described above,

7. Descend little by little in patch steps.

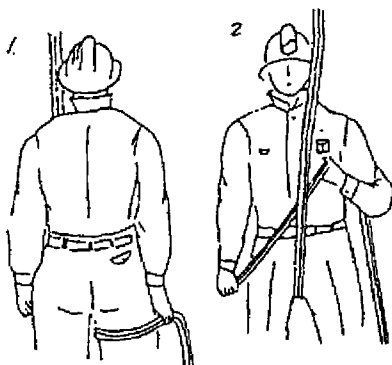
[Cautions on training]

1. Change angle of sole according to the steepness of the slope. And, take care not to scrape the wall with the soles.
2. Keep the eye always at the position where to place the foot next.
3. Never release the rope.
4. Place right hand and fingers correctly in holding the rope.
5. Keep the right foot a little lower than the left at any time to prevent for the rope get out of the crotch.
6. To brake movement, hold the rope tightly with the right hand at a place near the breast to increase scraping length.
7. Exercise of the method should be limited within two-story height in usual cases and three-story even in cases of an experienced person.



② Neck Catching

a. Method to turn rope



[Procedures]

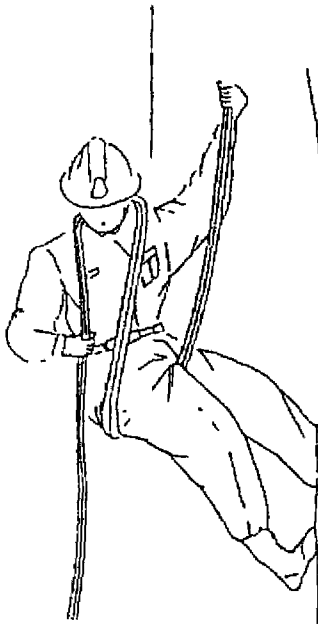
1. Facing the suspended rope, step it over. And, hold the rope turned backside with the right hand.
2. Turn the rope frontward from the right hip, and pass before the breast diagonally.



3. Turn the rope from the left shoulder to backside of neck and lower it on the right front side down.
4. Hold the rope coming down from the neck with right hand near the belly in such a way that the thumb is upside.



b. Method to descend



The procedures same for the shoulder catching method should be followed.

[Cautions on training]

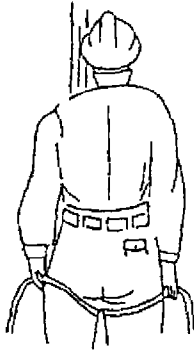
In addition cautions same as for shoulder catching method,

1. Turn up the collar of the working suit to avoid pain imposed by rope.

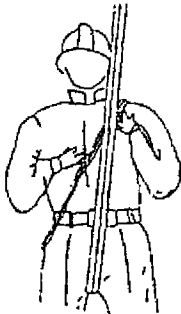
③ Cross Catching

a. Method to turn rope

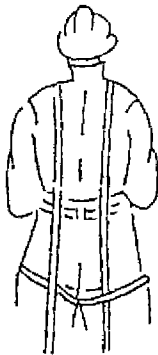
[Procedures]



1. Facing the suspended rope and stepping it over, split the rope on the back one line to the right and the other to the left.



2. Turn the right rope to front side via the right hip and pass it diagonally to the left shoulder to hang on the back from the left shoulder.



3. Turn the other rope samely as 2 only reversing right and left to hang it on the back from the right shoulder.



4. Hold the suspended rope in front of the eyes.

b. Method to descent

(a) Posture

- i. Hold upper position of the rope with the both hands stretched, and open the leg a little wider than the width of shoulder, the knees lightly stretched.
- ii. The upper body and the legs shall have a light angle as shown in the figure.



(b) Procedures

- i. Look down at the position to reach.
- ii. Loosening the hands' holding the rope, descend in such a manner as to walk on the wall with toes.

[Cautions on training]

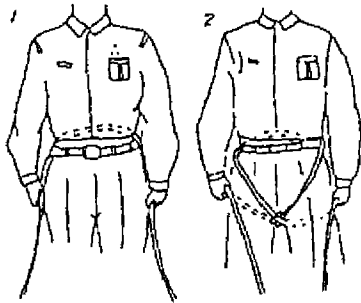
1. Descending speed shall be modest.
2. Angle between the upper body and legs shall not be deep (not so large as right angle).
3. For a person with not so strong arms' force, or in a case that the speed has got too fast, brake the descender by means that someone down on the ground pulls the rope hanging down from the descender's shoulder.

(2) Sitting Suspension

The method catches the descender's body with friction of rope turned around Karabiner(s). Descender's pain is so reduced that the method is suitable for the injured or sick or those with large instrument on their back to descend.

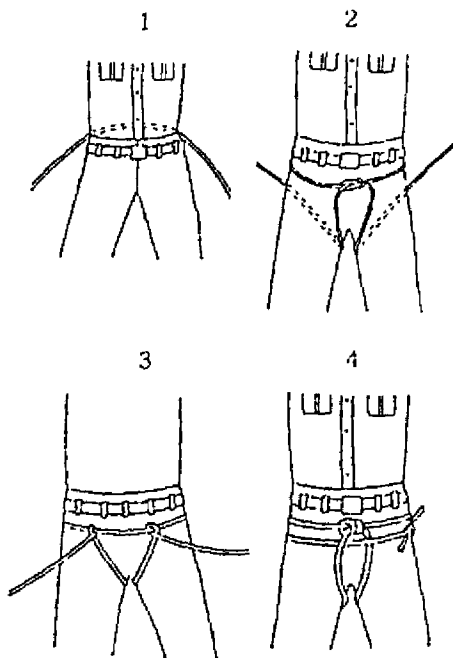
① Method to Prepare the Seat

(Method 1)



1. Turn a small rope around the back near the waist.
2. Taking the both ends in front of the descender, cross them at the crotch, pass backward under the crotch to the hip and take them to the front again from the outsides, right and left, splitting the two lines one by one in due side.

(Method 2)



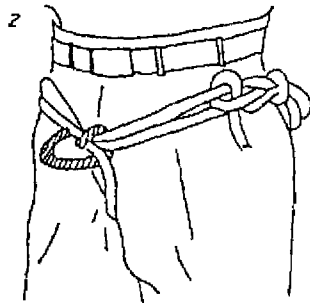
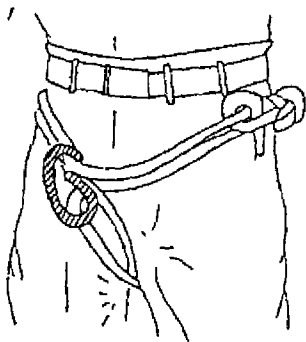
1. Turn a small rope around the back near the waist.
2. Taking the both ends in front of the body, make a reef knot at the belly and pass the both ends backward from under the crotch.
3. Pass each end around the small rope at the back waist to make a flat knot.
4. Pass the end of rope on the side of braking hand under the two lines of the small rope at the height of the underbelly to make a reef knot at the belly on the side opposite to the braking hand and make a half knot.

[Cautions on training]

Taking a case of right hand braking, make the end length on the left hand side a little longer, and the knot will be naturally positioned on the left waist.

② Method to Fit the Karabiner

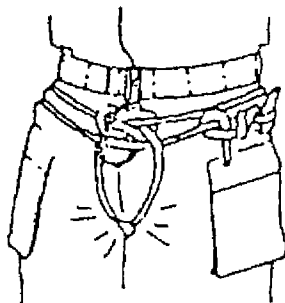
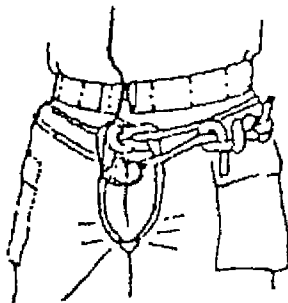
(Method 1)



[Procedures]

1. Collecting the three points of the center of small rope passing the belly and crossings of those passing under the crotch together, pass the gate of a Karabiner through each of the three from upside down.
2. Next, turn the Karabiner by half a rotation so that Karabiner's gate is positioned upside.

(Method 2)

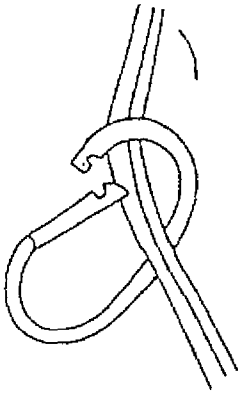


[Procedures]

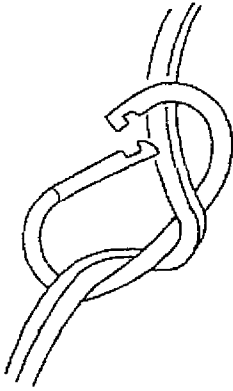
1. Collect two small ropes and one at the underbelly and combine them at the reef knot at the belly on the braking hand side.
2. Pass gate of a Karabiner through these three small rope from upside down.
3. Turn the Karabiner by half a rotation so that Karabiner's gate is upside.

③ Method to Turn the Rope around the Karabiner

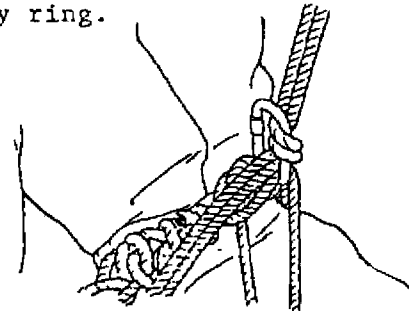
[Procedures]



1. Stand on the left side of the suspended rope as faced to the suspension point. Pass the rope through the Karabiner so that the rope nearer to the suspension point is on the left.



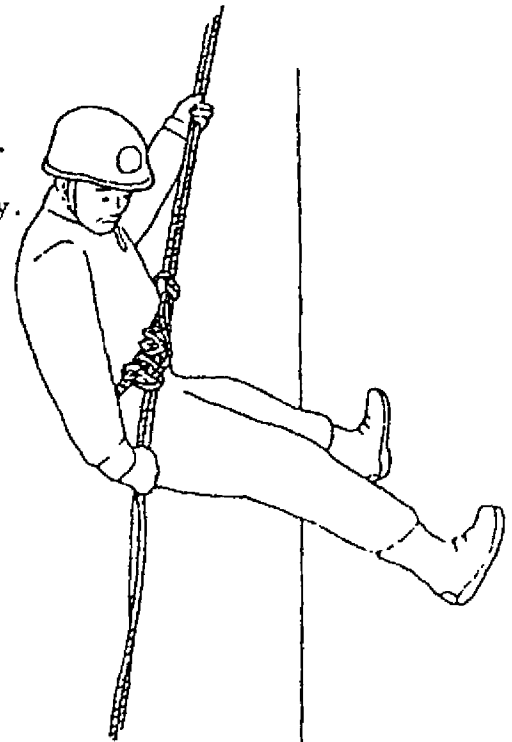
2. Holding the rope nearer to the suspension point with the right hand, turn it around the rod of the Karabiner and pass it again through the Karabiner. Close the safety ring.



④ Method of Descending

[Procedures]

1. Take off the sag of the rope on the suspension point side.
2. With the left hand, hold the rope upside lightly.
3. Keep the upper body parallel to the wall.
4. Keep legs perpendicular to the upper body.
5. Put the soles flatly on the wall.
6. With the posture above, weigh gradually on the rope.
7. As the rope is weighed, loosen the grip of the right hand.
8. Move the legs in patch steps.



[Cautions on training]

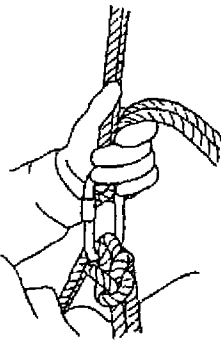
1. If sag of the rope remains, the body will drop all at once as much as the sag sometimes causing an accident.
2. Close the upper body to the rope.
3. Take the change of steepness of slope into consideration.
4. Open the legs laterally as much as one natural step with knees stiffly extended.
5. For braking, hold the rope with the right hand and press the backside of the hand to the waist with a feeling of turning the arm.
6. Never release the braking hand.
7. Keep the eyes carefully at the foothold.
8. Do not slide the feet on the wall in descending.
9. Do not move laterally if not necessary.
10. When there is some anxiety in descending, the descender shall be secured at above.

⑤ Method to Take Working Posture

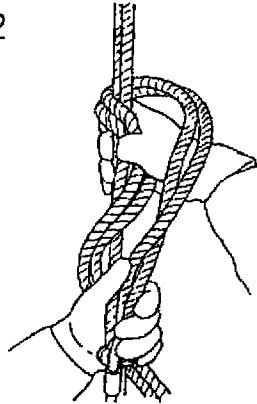
When to stop in the course of descending for the necessity to rescue an injured or a sick person hanging on rope, use this method.

[Method to make a knot of rope]

1



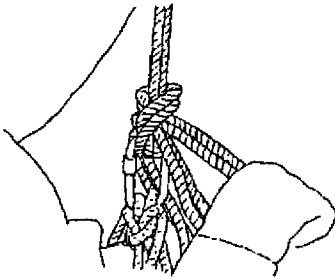
2



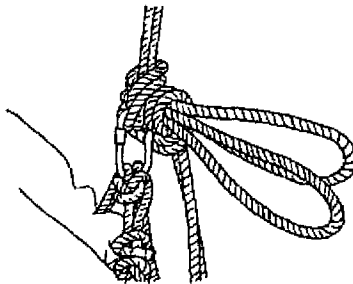
[Procedures]

1. Practice seating suspension.
2. At the point to stop at;
 - (1) By lifting the right hand (the braking hand) up holding the rope as it is, stop descending.
 - (2) Holding all the ropes at upside of Karabiner with the left hand, make transportation knot with the right hand.

3



4



[Cautions on training]

1. For taking working posture, open the legs enough and straighten the knees stiffly to secure the stability of body.
2. For some types of work, secure the upper body with the suspended rope for prevention of accident.
3. As position of the body comes down a little when making a transportation knot, take this into consideration in stopping.
4. Avoid extreme warping or lateral bending of the body.

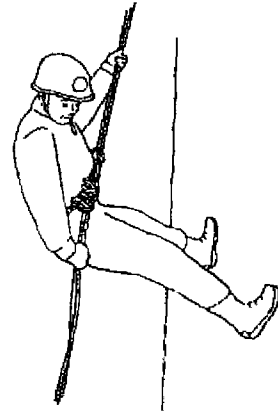
⑥ Overhand Descending

This is the method for such a case without foothold as passing eaves, corridor projection or a tower in the course of descending in seating suspension.

[Procedures]

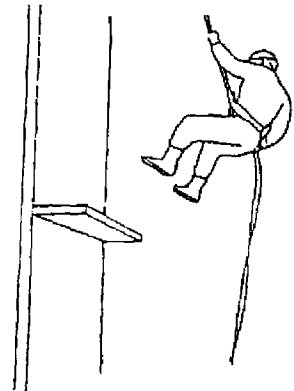
Practice seating suspension.

1. Take preparing posture at a point entering into the part without foothold.
Confirm the condition of landing point.
2. Jump and descend all at once loosening the brake.
Effectuate the brake just before landing.
Land.



[Cautions on training]

1. Never release the both hands.
2. Do not brake in the course of descending except at the time of landing.
3. Look conditions of landing place and footholds on route carefully.
4. Do not lose the posture during descending.
5. Go down all at once.
6. For a person of first experience, instruct the position of braking by ejaculating "Brake!"
7. When speed of descending is slow, the descender's body rotates caused by stranding of rope, what is dangerous. Immediately after the descending has stopped by braking, loosen the brake to land.



⑦ Seat Suspension Training Procedures

| Order | Leader | Person Descending | Details |
|-------|---|--|---|
| 1 | "Ready!" | Assume position approximately 1 meter to the left of the start point | The person descending prepares the seating position and attaches the karabiner. |
| 2 | "Prepare to lower!" | "OK!" Pass the suspension rope through the karabiner and take up any slack. "OK!" | The safety ring of the karabiner is securely fastened. |
| 3 | Check. | Slowly let the rope take your body weight and move out with your right leg and assume the descending position on the face of the wall. Check the karabiner. "Ready to Descend!" | |
| 4 | "Get Set!" | "OK." Slowly feed out the rope and walk down the wall. | |
| 5 | "Go!" | After stopping momentarily approximately 1 meter above the ground, land on the ground. "Landed!" | |
| 6 | "OK!" After receiving confirmation of landing. | After landing, remove the rope from the karabiner, pull the rope to the left and right and then let it go. "Rope OK!" "Finished!" | Any twist is removed from the rope in preparation for the next person to descend. |
| 7 | "All right!" | Run to the waiting area. | |

5. Rope Crossing

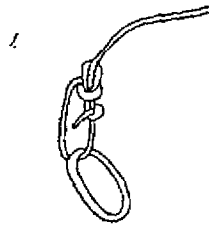
(1) Rope Crossing Procedures

a. Safety Lines

When crossing a rope bridge, a safety line is always attached between the rope and the person crossing the rope bridge.

[Method of Making Knot]

[Procedures]



1. Make a little bowline knot at an end of a small rope.

(Make sure the knot with a half knot added.)

Attach a Karabiner to the bowknot.

2. Hand down the Karabiner, and determine the length of the rope so that the Karabiner touches the ground at the feet with a little inclination. And, tie the other end of the rope at the belly solidly with a coil winding bowline knot.

b. Monkey crossing

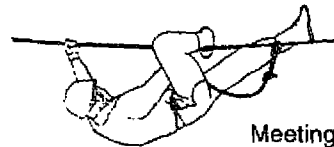
This is a method to cross a line of rope bridge. The name coming from the appearance of the crosser, the method is of the principle same as the conventional diagonal climbing.

As the crosser moves with his eyes upward, this method soften his sensation of fear to some extent. But, it requires force of arm and abdominal muscle.

[Procedures]

Meeting the rope with the Achilles tendon

1. Hand the Karabiner of safety rope on the rope bridge, and close the safety ring.



Meeting the rope with the instep



2. Hang oneself on the rope (ordinarily with one hand and one leg).

In the case of preparing with left hand and left leg,

- ① Hang the right leg on the rope.
- ② Hold the rope with the right hand at the front of left hand.

- ③ Move the left leg to a front position.
 - ④ Move the left hand to a front position. ...
- Continue/Repeat these procedures.

[Cautions on training]

1. Assure the tying of safety rope and handling of Karabiner.
2. To hang leg on the rope, do it with feeling of striking the rope with foot instead of hooking the leg as much as to the backside of knee.
3. Hold the rope surely with hands. As mismatching of rope's oscillation and body's oscillation may cause shaking off of legs, utilize reaction abroitly.
4. For a crosser that seems to be discouraged at midway, encourage him by giving words; "Ichi! Ni! (One! Two!)"
5. Although training is conducted at a low place at the first, do not fail to use safety rope and hard hat even in such an occasion.

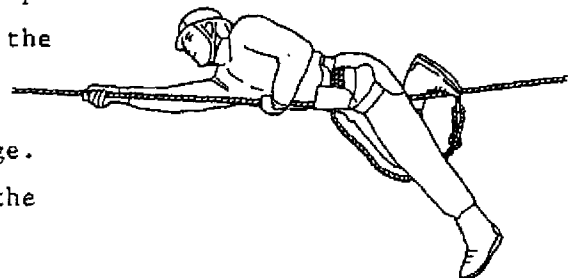
c. Sailor Crossing

The name came from the fact that sailors have been using this method.

As with this method, one sees down on the ground, sensation of fear may attack him. But, a skillful crosser can even carry light thing with this method.

[Procedures]

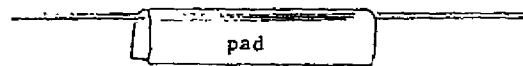
1. Hand the Karabiner of safety rope on the rope bridge, and close the safety ring.
2. Put the body on the rope bridge. Fit the body closely against the rope up to the breast.
3. Hang the right leg lightly on the rope bridge.
4. Pull the right leg on the rope towards the waist.



5. The left leg is lowered down freely and loosely.
6. Lift the face gazing at the knot at the straining point for the rope.
7. Proceed by pulling only with hands.

[Cautions on training]

- (1) Assure the knot of safety rope and safety ring of the Karabiner.
- (2) Put the centerline of body on the rope.
- (3) Extract force totally from the left leg. Pull the right leg towards the waist. These two items are necessary to maintain the balance.
- (4) Pad the belly of crosser (on safety rope and buckle) to protect the rope.
- (5) Although training is conducted at a low place at the beginning, do not fail to use safety rope and hard hat even in such an occasion.
- (6) Expand net or lay mat under the crosser for the sake of duplex safety.



Tyrolean Crossing

1. With your head pointing towards the destination, hold the rope in both hands and place your weight onto the lifeline.
2. Move your body forward by pulling on the rope with each hand alternately.

