# IMMOBILISATION TO THE NEANN LONG SPINE BOARD USING THE SIDE RELEASE STRAPS

This manual is taken from the book '**A photographic Guide to Prehospital Spinal Care'** and has been adapted for the use of NEANN's optional 'Side Release Strapping System' rather than the standard 'Speed Clip Strapping System'.

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# INTRODUCTION

The management of the potential or actual spinal injury patient requires skills including scene management, safe work practices, hazard control, patient assessment & treatment, as well as a range of Long Spine Board application techniques.

This manual should be used in conjunction with a proper course designed to develop a systematic approach to the potential or actual spinal injury patient. It should not be used in isolation.

## TRAINING

Officers should realise that there is no substitute for training and experience in spinal care. Each person must be thoroughly trained in all areas of the accident scene.

The ideal situation is to have all members of the team qualified to manage all the steps presented in this manual. If unqualified members are present at a scene, they must perform under strict supervision of a qualified team member.

Frequent exercises need to be held to ensure that training levels are maintained. Practice will lead to high levels of competence and safety.

RAPP Australia Pty Ltd recommends that initial training of persons in the immobilisation technique is to include:

1. Review of this manual under direct supervision of an appropriately trained supervisor.
2. Practical hands-on applications of procedures presented in this manual in a training environment under direct supervision of an appropriately trained supervisor before use on actual patients.

RAPP Australia Pty Ltd recommends that ongoing training of persons is to include:

1. Three monthly practical review in the use of the immobilisation techniques in its intended environment.
2. Twelve monthly theoretical & practical review .

Persons using these techniques without proper initial & ongoing training may place the patient at risk of injury, including permanent spinal cord damage.

## USING THIS BOOKLET

This booklet should only be used by persons who have previous first aid knowledge. It is designed for persons with a minimum Level Two - Workplace First Aid Course.

# IMMOBILISATION PROCEDURE

*The following section is a detailed photographic guide to Full Body / Spine Immobilisation using the Neann Long Spine Board using the Side Release Strapping System. These techniques offered are based on current research and x-ray studies and offer up to date teaching.*[1-5]

*There is increasing questioning by some of the need to immobilise the full spine, with suggestions that immobilisation does not prevent further cord injury, but may actually cause such injuries.*[6] *Whilst a Medline literature search failed to find any studies supporting the theory that immobilisation onto a Long Spine Board causes secondary cord injury, a number of studies have shown that failure to identify and immobilise patients with unstable fractures do acquire secondary cord deterioration.*[7] *Recent studies looking at prehospital spinal cord injuries & field clearance failed to establish any secondary cord injury on any patients correctly immobilised during transport.*[8-9]

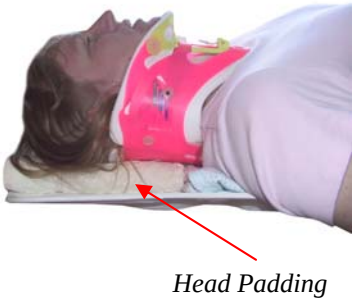
*A number of studies in the literature do present complications when* ***POOR STANDARDS*** *of immobilisation are performed. Issues include occipital, lumber and sacral pain development when padding is inadequate or absent,*[10-14] *increased respiratory compromise with incorrect chest strapping,*[15-16] *pressure sore development due to inadequate padding*[2-4] *and spinal miss-alignment again due to inappropriate padding.*[2, 14, 17] *When proper consideration is given, such complications are significantly reduced or avoided.*[1-5]

| **Training Requirements:** | **2 x Staff**<br>**1 x Patient**<br>**1 x Cervical Collar**<br>**1 x Long Spine Board**<br>**1 x Blanket**<br>**1 x Towel**<br>**1 x Hand / Wrist Airsplint**<br>**5 x Side Release Straps**<br>**2 x Head Blocks**<br>**1 x Head Tape Roll** |
|---|---|

## Procedure


### Step 1

Place 1 - 2 blankets down the full length of the Board. This will provide significantly improved comfort, reduce pressure sore development, limit vibration to the patient during both road and helicopter transport, and prevents heat loss through lying on the Board.



*Head Padding*

Place adequate padding under the lumber spine and head to fill the gaps formed by the anatomical curvature of the spine.

In adults, firm padding using a folded towel or similar (**NOT PILLOWS**) is generally required under the patient's head to prevent hyperextension of the cervical spine,[14, 17] while in children under 8 years of age, padding under the torso rather than the head is generally required to prevent hyperflexion of the cervical spine.[19-20] Some adults and children will however require no padding.

*Lumber Support*

For the lumber spine, a hand / wrist airsplint (which is inflated once in position) is the easiest method of padding under the lumber region.

## NOTE

Position the side release straps near Board within easy reach.

To ease and rapidly speed up application of straps, it is best to stand straddled over the patient.

In a suspected spinal injury, one person should also continue holding the head to maintain head alignment until the head blocks (Step 7) are attached. A Cervical Collar alone has been shown in numerous studies to be ineffective in maintaining adequate cervical spine immobilisation.[21-24]

## Step 2

*Shoulder Straps*

Apply first and second side release straps across the chest in a crossing application with the buckles near the collar. Following application of the straps, there should be just enough slack to allow one hand to be placed between the chest and the strap. Each strap should be placed over the clavicle and fed through the handhold under the shoulders, with the lower end of the strap fed through the abdominal handhold on the opposite side.

These first two straps will prevent upward sliding of the patient's body when the Board is tilted head down, or when the brakes of the vehicle are applied during transport. They will also help prevent lateral movement of the torso if the Board needs to be tilted sideways.[26]


## Step 3

Place the third side release strap across the pelvic bone or iliac crest, and feed through the pelvic handholds. Ensure that the strap goes over the bone rather than the soft abdomen otherwise abdominal organ damage may occur.

This strap will help prevent lateral movement of the spine.


## Step 4

Place the forth side release strap across the femur, and feed through the femur hand holds. Extra padding using rolled up towels on each side of the legs may be required for patients with narrow legs. If the legs are able to move laterally, spinal column movement including the cervical spine can still occur.[25]


## Step 5

Using the fifth side release strap, apply the strap across the lower legs, feed through the lower leg handholds, and then apply a 'Figure Of Eight' around the patient's ankles to prevent downward sliding of the patient on the Board that may occur if the foot end of the Board is tilted downwards, or when the Ambulance accelerates. This strap will also help prevent lateral movement of the legs.

## Step 6

If available, one further side release strap can be placed loosely over the chest region so as to support the upper arms of the patient from flopping around; to help prevent lateral movement;[9] and to help prevent the upper arms from moving above shoulder height. Raising the arms above the shoulder level as required for such manoeuvres as the Canadian Log-Roll is in general CONTRA-INDICATED in spinal injuries, as studies have shown this causes sagging of the thoracic and lumber spine.[26-27]

## Step 7

Once the patient's body is secured properly to the Board, **ONLY THEN** is the patient's head immobilised to the Board. Ensure the correct amount of firm padding (using a towel, not a pillow) is under the head to maintain the patient's spine in the neutral in-line position (generally around 2 - 7 cm in an adult). Now place either commercially available Head Blocks or home made Head Rolls (using rolled blankets or towels) on each side of the head. Using 2 - 5 cm tape, tape the Head Blocks and head to the Board, going initially across the Cervical Collar and then across the forehead. The tape should not be placed over the lower jaw as this will clamp the jaw closed therefore interfering with airway management.

## Summary

The patient can now be log-rolled, tilted, vertically or horizontally lifted, stood up, etc with almost no movement to the body and spinal column until an X-Ray can confirm or exclude the presence of an unstable spinal column.

The curved board will also allow for slight tilting of the Board every 20 minutes to assist with pressure area care (a procedure that cannot be achieved when the patient is laid on a stretcher or flat board).

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# ACCESSORIES FOR THE FULL SPINE IMMOBILISATION

To assist with Full Spine / Body Immobilisation, additional equipment to the Long Spine Board is required. It is also helpful if all this additional equipment is prepared and stored in a single Carry Bag, so that the accessory items can be easily carried to the patient and no time is wasted searching for the equipment.

The following spinal immobilisation accessories listed below, should be considered:

**SPINE IMMOBILISATION EQUIPMENT CARRY BAG**

Containing the following items:

- Full Set Of Cervical Collars
- 5 (or 6) Side Release Straps
- 3 x Towels - 1 for padding under the head
  - 2 for padding out the femurs
- 2 x Head Blocks (*or* 2 x Double Towel Rolls)
- 2 x Head Immobilisation Tape (2.5 or 5 cm width)
- 1 x Blanket or commercially available Board Padding
- 1 x Hand / Wrist Airsplint with Extension Tubing - to pad under lumber spine

# TRAINING EVALUATION FORM
# IMMOBILISATION TO A LONG SPINE BOARD

Organisation: ……

Officers Name Undertaking Training: ……

**INITIAL TRAINING**

| | Date Completed | Supervisor |
|---|---|---|
| Instruction Manual Reviewed | | |
| 5 x Immobilisation Applications | | |

**THREE MONTHLY REVIEW**

| | Date Completed | Supervisor |
|---|---|---|
| 1 x Immobilisation Application | | |
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**TWELVE MONTHLY REVIEW**

| | Date Completed | Supervisor |
|---|---|---|
| Instruction Manual reviewed | | |
| 1 x Immobilisation Application | | |

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