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**NEANN IMMOBILISATION & EXTRACTION JACKET**

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# **INSTRUCTION**

# **BOOKLET**



**READ BEFORE USE**

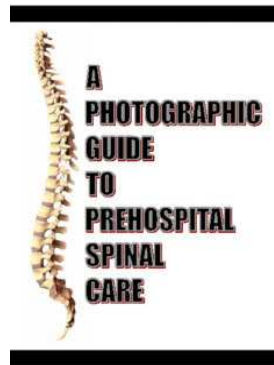
**RAPP Australia Pty Ltd**

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and is taken from the manual 'A Photographic Guide to Prehospital Spinal Management' available for free download at [www.neann.com/psc.pdf](http://www.neann.com/psc.pdf)



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## NEANN IMMOBILISATION & EXTRACTION JACKET

The Neann Immobilisation & Extraction Jacket (NIEJ) is a spine immobilisation jacket style extrication device designed by RAPP Australia Pty Ltd. The NIEJ combines many of the best features of the current jacket devices on the market, removes many of the common complaints from users, and developed the design using the latest research to provide an extremely effective and easier to apply cervical splint / extraction device.

The development of this RAPP Australia Pty Ltd product has allowed for substantial improvements to patient care and comfort. During development of the NIEJ, it was identified that many of the new features introduced to address patient welfare, also improved the usage characteristics for the Paramedic or Rescue worker.

Examples of where RAPP Australia Pty Ltd has taken this new generation device includes the introduction of lumbar support to maintain lower spinal alignment and improve comfort allowing the patient to be placed on a spine board for longer periods of time with vastly improved comfort levels.

On previous designs, groin straps tended to fold over, find uncomfortable crevices and notches, and when the devices were used for lifting or pulling, the discomfort to the wearer was often excessive. A simple design feature of the NIEJ includes two flexible and conforming groin pads placed on the groin straps to reduce this problem.

Spinal studies from the late 60's onwards have shown that the greater the ability to isolate spinal zones, and incorporating the use of semi-rigid cervical collars, spine boards, vacuum mattresses and a spinal jacket inversely increase the immobilisation efficiency, when such tools are used together. The NIEJ design has further allowed for improved immobilisation by:

- restricting lower lumbar movement (*with new groin strap design & placement*),
- cervical spine compression potential removed (*by introduction of shoulder straps*),
- greater spinal stabilisation (*by use of shoulder straps, single spine panel and new head strapping system*),
- maintenance of natural curvatures (*with the introduction and development of firm head padding and lumbar support*).

In total **14 new design features** have been introduced into the NIEJ over similar devices.

Like other jacket or "half-board" devices, the NIEJ is designed to only provide spine immobilisation of a sitting patient, until that patient can be placed onto a long spine board or vacuum mattress. Proper and effective full spine immobilisation cannot be achieved using any "sitting" jacket or half-board device alone. Therefore prior to transport, the patient still wearing the NIEJ, must be immobilised to a long spine board or vacuum mattress.

## **TRAINING**

Prehospital personnel should realise that there is no substitute for training and experience in spinal management. Each person must be thoroughly trained in all areas of prehospital spinal care.

The ideal situation is to have all members of the team qualified to manage all the steps presented in this booklet. 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 requires that initial training of users is to include:

1. Review of the NIEJ Powerpoint Presentation (supplied with each NIEJ) under direct supervision of an appropriately trained supervisor.
2. Review of the NIEJ Instruction Manual (supplied with each NIEJ).
3. A minimum of 5 applications of the NIEJ in a training environment under direct supervision of an appropriately trained supervisor before use on actual patients.

RAPP Australia Pty Ltd requires that ongoing training of users is to include:

1. Three monthly practical reviews in the use of the NIEJ in its intended environment,
2. Twelve monthly theoretical & practical reviews

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

## **USING THIS MANUAL**

This manual is designed to be used in conjunction with a proper RAPP Australia Pty Ltd approved course, and must not be used in isolation.

The instructions supplied in this booklet are for use by properly trained Prehospital personnel and serve as a guideline only.

**If any conflict exists between information presented in this booklet and your organisations protocols, follow your Medical Directors recommendations.**

**FIELD USE**

**OF THE**

**NIEJ**

## **PRIMARY ROLE**

The NIEJ is primarily an interim device for use on sitting patients to take the patient from the sitting position to a lying position on a Long Spine Board or Vacuum Mattress.

In applying the NIEJ, the device will also assist in preventing twisting of the spinal column during extraction, and provide handles on the patient to aid extraction.

## **INDICATIONS FOR USE**

The NIEJ is indicated for use as a cervical splinting device when the patient is found in a confined or restricted space, and where:

1. Signs & symptoms of potential or actual spinal cord / column injury exist

OR

2. Mechanism of Injury exists without signs & symptoms of spinal cord / column injury but the patient has:
  - a. Altered conscious state
  - b. Alcohol or drug consumption
  - c. Distracting injury or event
  - d. Modifying factors (including language barrier, pregnancy, intellectually disabled, extremes of age)

Other uses of the NIEJ include:

1. Lifting Device (refer to Australian Standards - Prevention of Falls 2007)
2. Pelvic Splint
3. NOF Splint
4. Extremity Splint
5. Paediatric Full Spine Immobiliser

## **CONTRA-INDICATIONS OF USE**

The NIEJ is contraindicated for use as a cervical splint when:

The patient is actual time critical,

AND

The application of the NIEJ will directly delay transport to a trauma centre or appropriate hospital.

## **LIMITATIONS OF USE**

The NIEJ has a number of limitations when used as a cervical splint:

1. Can be time consuming to apply especially with inadequate ongoing training, with times varying upwards from 2 minutes as a lifting device and 4 minutes as a Cervical Splint.
2. Whilst providing excellent cervical spine immobilisation, the NIEJ provides only moderate thoracic / lumbar support.
3. May be difficult to insert when:



Access to torso is limited from one or both sides



Patient is sitting, but inclined on side at an angle greater than 30°



Patient is sitting, but inclined backwards at an angle greater than 30°

## **PRECAUTIONS OF USE**

When applying the NIEJ, the following precautions should be considered:

1. Chest straps too tight can interfere with respiratory effort.
2. Groin straps not placed within the gluteal fold, or not sufficiently secure may result in the NIEJ sliding up during the extraction potentially causing neck stretch.
3. Incorrect head padding can lead to cervical spine hyperextension or hyperflexion.
4. Immobilising the head to the NIEJ, but failing to properly secure the torso section may cause c-spine twisting movement.



# **C-SPINE**

**APPLICATION**

**OF THE**

# **NIEJ**

The following steps provide the recommended guidelines for the application of the NIEJ as a c-spine splint. The preferred method of application requires three staff - one on each side of the patient, and a third Officer behind the patient.

## **APPLICATION**

1. **Officer 1** undertakes full assessment of the patient before application of the C-Collar & NIEJ. This includes:
  - Check safety, scene, and situation.
  - **Officer 3** brings c-spine into neutral in-line position (unless contra-indicated) and performs manual head stabilisation.
  - Perform Primary Survey:
    - i. **R**esponse
    - ii. **A**irway
    - iii. **B**reathing
    - iv. **C**ompressions (& Major Bleeds check)
  - Perform Basic Care (as appropriate):
    - i. **R**est & reassurance
    - ii. **R**andom Blood Glucose
    - iii. **O**xygen
    - iv. **P**osition
    - v. **P**ulse Oximeter
    - vi. **E**CG Monitor
    - vii. **E**T<sub>CO2</sub> Monitor
  - Perform A Vital Signs Survey:
    - i. **C**onscious Status Assessment
    - ii. **P**erfusion Status Assessment
    - iii. **R**espiratory Status Assessment
  - Perform A Secondary Survey:
    - i. Motor/Sensory x 4
    - ii. Head
    - iii. Spine
    - iv. Chest
    - v. Abdo
    - vi. Pelvis
    - vii. Legs
    - viii. Arms
  - Check AMPLE:
    - i. **A**llergies
    - ii. **M**edications
    - iii. **P**ast medical history
    - iv. **L**ast oral intake
    - v. **E**vents leading up to injury

2. Following the patient assessment (step 1) **Officer 3** continues manual head stabilisation and maintains this during application of NIEJ, even once the C-Collar is applied. *Remember a C-Collar will provide only 50% immobilisation of the c-spine.*



3. Select and apply a correctly fitting C-Collar as per manufacturers guidelines.



4. If appropriate, remove all bulky items from chest and pelvic pockets *to prevent discomfort of NIEJ once in place.*



5. Remove the NIEJ from the carry bag. Do not undo any straps on the jacket, but ensure all straps are firmly held in place for insertion.



6. Lay the carry bag on the vehicle or ground, and place 1 x yellow lumbar support, 2 x blue groin pads, 4 x red head pads, 1 x grey head pad and 2 x black head straps on the carry bag *for ease of access and location of items later.*



7. **Officer 2** slightly rotates seat back or alternatively, leans the patient slightly forward of the seat. *This will allow easy insertion of the NIEJ.*

**Officer 1** inserts NIEJ at 45 degree angle behind patient with buckles facing outwards from the patient. Once in behind patients back, straighten up the NIEJ and ensure it is correctly centered behind the patient.



8. Roll up the Lumbar support pad to squeeze out all the air and then straighten out. Insert lumbar support pad whilst deflated into the curve of lumbar spine. *This will assist in maintaining the natural curvature of lumbar spine, and help prevent lower back pain following immobilisation.* Alternatively, a folded towel can be used if the lumbar support pad is misplaced.



9. Position NIEJ so that top of NIEJ is no higher than the top of the patients head, or if this is not possible, the jacket is firmly in the patients armpits.

10. Release groin straps from back of NIEJ. Hold both groin straps together ensuring straps are not twisted. Pull groin straps down between patient and chest flap. Slide both groin straps together under one leg, zig zagging straps under the leg and buttocks until straps are in the gluteal fold. *It is essential that the straps are in the gluteal fold to ensure proper stability of NIEJ and to prevent loosening of straps when leg position changes during the extrication.*



Pull groin straps fully forward and leave.



11. Raise arms to shoulder height, then position chest flaps against patients chest. *Avoid raising arms higher than shoulders as this may cause upper spinal column movement.* Again ensure NIEJ is correctly positioned at head level or in the armpits.



12. Apply green shoulder straps. *These will prevent NIEJ sliding down body.* Select one of the following two methods:

### **Cross Strapping**

This is the preferred method of application as *it provides superior immobilisation to that of the vertical strapping technique.*

Release green shoulder strap from holder. Bring left sided green strap over shoulder and connect to green strap female buckle on right side of chest flap. Place hand between strap & chest, adjust strap using feed & pull until a firm sensation is felt on hand. Bring right sided green strap over shoulder and connect to green strap female buckle on left side of chest flap. Place hand between strap & chest, adjust strap using feed & pull until a firm sensation is felt on hand.



### **Vertical Strapping**

Release green shoulder strap from holder. Bring left sided green strap over shoulder and connect to green strap female buckle on left side of chest flap. Place hand between strap & chest, adjust strap using feed & pull until a firm sensation is felt on hand. Bring right sided green strap over shoulder and connect to green strap female buckle on right side of chest flap. Place hand between strap & chest, adjust strap using feed & pull until a firm sensation is felt on hand. *This vertical strapping method is preferred when shoulder or chest injuries are present, or when there is respiratory distress.*



13. Apply yellow chest strap. To apply, release yellow strap from holder. Connect yellow strap buckles & place hand between strap and patients chest. Place hand between yellow strap & chest, adjust strap using feed & pull until a firm sensation is felt on hand. *Beware of over tightening as it may result in respiratory compromise.*



14. Apply red chest strap. To apply, release red strap from holder. Connect red strap buckles & place hand between strap and patients chest. Adjust strap using feed & pull until a firm sensation is felt on hand. *Beware of over tightening strap as it may result in pressure or injury to the abdominal organs.*



15. *The black groin straps are designed to prevent upward sliding of the NIEJ. Connect groins straps by:*

Slide blue groin pads onto each black groin strap and slide into sub pubic groin area. *Pads will improve comfort for when lifting or sliding the patient.*



Connect black groin strap buckles. Place hand between strap and patients abdomen. Adjust straps using feed & pull until a firm sensation is felt on hand.





16. Recheck green, yellow, red and black straps to confirm comfortable but firm fit.

*It is essential that before immobilising the patients head to the NIEJ that the NIEJ cannot move up, down, left or right. If movement cannot be prevented then two choices are available:*

- *If the NIEJ is to be used as a lifting device, **DO NOT** immobilise head to NIEJ as c-spine movement or stretching may occur, with potentially disastrous results.*
- *If the NIEJ is to be used for c-spine immobilisation, immobilise the head (as per steps 2 to 24), but **DO NOT** lift using the NIEJ as c-spine movement or stretching may occur, with potentially disastrous results.*



17. Begin application of the head section by initially ensuring head is still positioned in the neutral in-line position. *In general, adults require between 4 cm to 7 cm of padding at the occipital skull to prevent hyperextension of the c-spine. Padding at the neck region when using semi-rigid c-collars is not required and may place unwanted pressure on the c-spine.*



18. **Officer 1** selects and velcros together a sufficient number of red head pads and the one grey head pad needed to completely fill the space between the patient's occiput and the NIEJ. Carefully slide and velcro the padding onto the NIEJ, ensuring the grey pad is next to the patient's head and avoid movement of the head during insertion. *This will prevent hyperextension of the cervical spine. The grey pad is especially design to improve head comfort. Alternatively, a folded towel can be used if head pads are misplaced.*



19. Whilst **Officer 3** continues to maintain manual in-line immobilisation, **Officer 1** folds the head flaps inwards placing them alongside the flat lateral planes of the head. Once the head flaps are in place, **Officer 3** maintains manual in-line support with their hands now on the outside of the head flaps.

20. Apply 25mm Collar Strap by attaching side hook velcro tabs to head flaps with sliders level with front of head flaps. Tighten strap by ensuring foam pad is centred on c-collar (away from chin support), placing thumbs on centre of strap, and pulling both ends with equal pressure. Place only enough pressure to prevent movement, but not to deform collar or place pressure on the jaw line. Velcro into place. *Under no circumstances is pressure to be placed on the patients jaw line as this may clamp the mouth shut, compromising the patients airway.*



If no C-Collar can be applied, tighten strap by ensuring pad centered on maxilla just under nostrils, placing thumbs on center of strap, and pulling both ends with equal pressure. Velcro into place.

21. Apply 50mm Forehead Head Strap by attaching side hook velcro tabs to head flaps with sliders level with front of head flaps, ensuring forehead head strap bottom aligns with bottom of patients eyebrows. Tighten strap ensuring foam pad centered on forehead, placing thumbs on center of forehead, and pulling both ends with equal pressure. Velcro into place.



Alternatively, if head straps are not available, crepe bandages or Coban™ can be used.

22. Extract the patient from position by sliding, lifting and/or maneuvering the patient onto a Long Board following the 2 basic principle of extraction:
- Maintain spinal alignment
  - Minimal body twisting

following the techniques provided in the manual at [www.neann.com/psc.pdf](http://www.neann.com/psc.pdf).

Place a towel between the Long Board and the NIEJ to allow the NIEJ to slide easily up the Long Board.

23. Once the patient is lying supine on the long spine board, carefully straighten the patient's knees. If the groin straps are correctly in position, no tightening on the groin area should be felt. Straps can be loosened, but not removed, if increasing tension is however felt.
24. Immobilise patient still wearing NIEJ (if appropriate) to Long Board or Vacuum Mattress.
25. Provide necessary additional treatment.



# **ALTERNATIVE**

**APPLICATIONS**

**OF THE**

# **NIEJ**

The following are some alternative uses of the NIEJ:

*Pelvic Fracture Splint*



*NOF Fracture Splint*



*Extremity Fracture Splint*



*Paediatric Full Spine Immobiliser*



# **CLEANING**

# **INSTRUCTIONS**

## **CLEANING INSTRUCTIONS**

All fabrics used in the NIEJ are designed to comply with the **Australian Standards on Laundry Practice (AS 4146-1994)** for the removal and killing of HIV, Hepatitis B and Vegetative Organisms.

A cleaning program that complies with the Australian Standards is available directly from RAPP Australia Pty Ltd for cleaning blood, vomit and other substances off the NIEJ. For those wishing to undertake in-house cleaning (at your own risk, including risk to warranty), some basic guidelines are listed below:

- *The cleaner in keeping with normal practices should put on personal protection barrier equipment such as gloves, safety glasses, face masks, etc..*

- **Small areas of contamination:**

*Blood - Soak by placing a wet sponge on stain immediately after contact. If available, an antibacterial solution (eg Virkon or Miltons) should be added to the water. Repeat as necessary, then gently clean off residual stains with light spray of Nifty.  
Allow to dry thoroughly before re-use.*

*Vomit - Gently sponge with hot water immediately after contact. If available, an antibacterial solution (eg Virkon or Miltons) should be added to the water. Repeat as necessary, then gently clean off residual stains with light spray of Nifty.  
Allow to dry thoroughly before re-use.*

- **Larger areas of contamination:**

*Blood - Soak by placing effected panels in cold water. An antibacterial solution (eg Virkon or Miltons) should be added to the water. Let effected part soak for 20 minutes.  
Using Nifty, gently sponge of residual stains.  
Allow to dry thoroughly before re-use .*

*Vomit - Soak by placing in hot water. An antibacterial solution (eg Virkon or Miltons) should be added to the water.  
Using Nifty, gently sponge of residual stains.  
Allow to dry thoroughly before re-use.*

*In very heavy saturation, soak the NIEJ in cold water with an antibacterial solution (eg Virkon or Miltons) for 2 hours, rinse and then emerse again and bring up to a temperature of 90 degrees Celsius and maintain for 10 minutes. Using Nifty, gently sponge of residual stains. Dry thoroughly before re-use.*

**Failure to comply with proper cleaning instructions may damage material and void warranty**

# SPECIFICATIONS

## **DIMENSIONS**

Dimension of the NIEJ stored is:

Length	83 cm
Height	13 cm
Width	26 cm

Dimension of the NIEJ fully opened is:

Length	81 cm
Height	2 cm
Width	86 cm

## **WEIGHT**

Weight of the NIEJ is 4.5 kg including storage bag

## **SAFE WORKING LOAD**

The safe working load of the NIEJ is 130 kg.

## **PARTS SUPPLIED**

Part Number ..... NIEJ Carry Bag (1)  
Part Number ..... NIEJ Jacket (1)  
Part Number ..... NIEJ Yellow Lumbar Support (1)  
Part Number ..... NIEJ Blue Groin Pads (2)  
Part Number ..... NIEJ Red Head Pad (4)  
Part Number ..... NIEJ Grey Head Pad (1)  
Part Number ..... NIEJ Chin Strap 25 mm (1)  
Part Number ..... NIEJ Forehead Strap 50 mm (1)  
Part Number ..... NIEJ CD Powerpoint Training Presentation Oct2010 (1)  
Part Number ..... NIEJ Printed Training Manual Oct2010 (1)

Spare parts are available on request by contacting RAPP Australia Pty Ltd

## **WARRANTY**

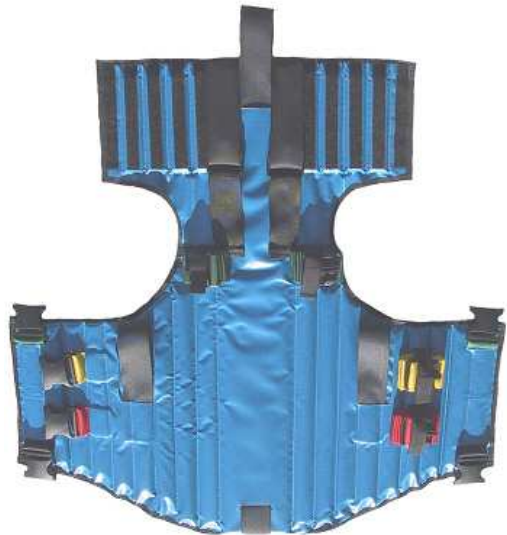
RAPP Australia Pty Ltd warrants to the purchaser that the NIEJ is free from defects in material and workmanship for a period of 3 years from the date of purchase by the original user. During this period, RAPP Australia Pty Ltd will upon receipt of the product found to be defective due to materials or workmanship from the purchaser and notification in writing of the defect at its option repair or replace any parts found to be defective or the entire product. All postage, shipping and handling charges shall be the sole responsibility of the purchaser.

# COMPONENTS OF THE NIEJ

**Components of the NIEJ include**



NIEJ Carry Bag (1)



NIEJ Jacket (1)



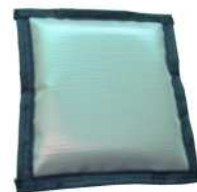
NIEJ Yellow Lumbar Support (1)



NIEJ Blue Groin Pads (2)



NIEJ Red Head Pad (4)



NIEJ Grey Head Pad (1)

NIEJ Chin Strap 25 mm (1)



NIEJ Forehead Strap 50 mm (1)



# **NIEJ TRAINING EVALUATION FORM**

**NIEJ TRAINING EVALUATION FORM: C-SPINE APPLICATION**

Organisation: .....

Officers Name Undertaking Training: .....

**INITIAL TRAINING**

Powerpoint presentation Reviewed  
 Instruction Manual Reviewed  
 5 x NIEJ Training Applications

Date Completed	Supervisor

**THREE MONTHLY REVIEW**

1 x NIEJ Training Application

Date Completed	Supervisor

**TWELVE MONTHLY REVIEW**

Powerpoint Presentation Reviewed  
 Instruction Manual reviewed  
 1 x NIEJ Training Application

Date Completed	Supervisor

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# **NIEJ SKILLSHEET**

## **C-SPINE IMMOBILISATION APPLICATION**

RAPP AUSTRALIA PTY LTD		
	<b>CERVICAL SPINE IMMOBILISATION APPLICATION OF NEANN IMMOBILISATION &amp; EXTRACTION JACKET (NIEJ)</b>	<b>SKILL SHEET</b>  NIEJ  Version 2.0  27 October 2010
<b>EQUIPMENT REQUIRED:</b>  3 x personnel (1 for head stabilisation, 2 to apply NIEJ); Cervical Collar; NIEJ (including jacket, 1 x yellow lumbar support, 2 x blue groin pads, 4 x red head pads, 1 x grey head pads, 1 x 25mm collar strap, 1 x 50mm forehead strap);		
Apply manual head stabilisation	1. Ensure manual head stabilisation is maintained during application of NIEJ, even once C-Collar is applied.	C-Collar only provides 50% C-spine.
Apply Cervical Collar	1. Refer to Current Service Protocols	
Prepare patient.	1. If appropriate, remove all bulky items from chest and pelvic pockets. 2. Inform and reassure patient of procedure.	Prevents discomfort of NIEJ.
Prepare NIEJ	1. Remove NIEJ from storage bag. 2. Open NIEJ flat ready for use. 3. Ensure all straps are tightly attached to NIEJ	Loose straps will come apart during insertion.
Insert NIEJ behind patient	1. Slightly rotate seat back or alternatively lean patient slightly forward of seat. 2. Insert NIEJ at a 45 degree angle behind patient. 3. Once in behind back, straighten up and ensure NIEJ is centered behind patient.	Essential for proper stability of NIEJ.
Insert lumbar padding	1. Roll up lumbar support pad to remove all air 2. Insert deflated lumbar support in curve of lumbar spine. 3. Lean patient back onto NIEJ.	Will assist to maintain natural curvature of lumbar spine, and help prevent lower back pain.
Position NIEJ	1. Ensure top of NIEJ is level with top of patients head and/or securely in armpits.	
Position groin straps	1. Release groin straps from back of NIEJ 2. Hold both groin straps together ensuring straps are not twisted. 3. Pull groin straps down together between the patient and the inside of chest flap. 4. Slide groin straps under one leg, zig zagging straps under leg until straps are in the gluteal fold. 5. Pull groin straps fully forward and leave.	Essential for proper stability of NIEJ and to prevent loosening of straps when leg position changes.

CERVICAL SPINE IMMOBILISATION APPLICATION OF NIEJ		Page 2 of 3
Position chest flaps into place.	<ol style="list-style-type: none"> <li>1. Raise arms to level with shoulders.</li> <li>2. Wrap chest flaps around chest.</li> </ol>	To avoid upper spinal movement, do not raise arms above shoulder height.
Apply green shoulder straps:		
- Method 1: <i>Cross strapping (preferred method)</i>	<ol style="list-style-type: none"> <li>1. Bring left sided green strap over shoulder and connect to green strap buckle on right side of chest flap. Adjust to firm fit.</li> <li>2. Bring right sided green strap over shoulder and connect to green strap buckle on left side of chest flap. Adjust to firm fit.</li> </ol>	Prevents NIEJ sliding down torso when groin straps are applied. If defibrillator pad needs to be applied, only one shoulder strap needs to be released thus maintaining best possible stability.
- Method 2 <i>Vertical strapping</i>	<ol style="list-style-type: none"> <li>1. Bring left sided green strap over shoulder and connect to green strap buckle on left side of chest flap. Adjust to firm fit.</li> <li>2. Bring right sided green strap over shoulder and connect to green strap buckle on right side of chest flap. Adjust to firm fit.</li> </ol>	Method 2 is preferred if a shoulder injury exists.
Apply yellow chest strap.	<ol style="list-style-type: none"> <li>1. Bring right sided yellow strap across chest and connect to yellow strap buckle.</li> <li>2. Place hand between strap and patients chest. Adjust yellow strap until a firm sensation is felt on hand.</li> </ol>	Overtightening will cause respiratory compromise by up to 25%.
Apply red chest strap.	<ol style="list-style-type: none"> <li>1. Bring right sided red strap across chest and connect to red strap buckle.</li> <li>2. Place hand between strap and patients chest. Adjust red strap until a firm sensation is felt on hand.</li> </ol>	Overtightening may place unnecessary pressure on the abdominal organs.
Connect groin straps.	<ol style="list-style-type: none"> <li>1. Slide a blue groin pad onto each black groin strap.</li> <li>2. Slide blue groin pads along black straps, ensuring blue groin pads contact sub-pubic area.</li> <li>3. Connect black groin straps to bottom black strap buckles on chest flap.</li> <li>4. Adjust black groin straps until firm.</li> </ol>	Padding prevents groin strap discomfort that may occur during the extrication.
Recheck all torso straps.	<ol style="list-style-type: none"> <li>1. Recheck green, yellow, red chest and black groin straps ensuring firm.</li> </ol>	

CERVICAL SPINE IMMOBILISATION APPLICATION OF NIEJ		Page 3 of 3
Apply head section.	<p>Ensure head is in the neutral in-line position:</p> <ol style="list-style-type: none"> <li>1. Select correct number of red head pads and 1 x grey head pad to fill gap between NIEJ and occipital of skull.</li> <li>2. Ensure grey head pad is against patient's head.</li> <li>3. Slide head pads in between NIEJ and patients head. Bring head flaps forward and ensure velcroed into position.</li> <li>4. Apply 25mm Collar Strap by:               <ol style="list-style-type: none"> <li>a) attach side hook velcro tabs to head flaps with sliders level with front of head flaps.</li> <li>b) tighten strap by ensuring pad centred on collar (away from chin support), placing thumbs on centre of strap, and pulling both ends with equal pressure. Velcro into place.</li> </ol> <p style="text-align: center;"><i>Or if no collar on patient</i></p>               tighten strap by ensuring pad centered on maxilla just under nostrils, placing thumbs on center of strap, and pulling both ends with equal pressure. Velcro into place.             </li> <li>5. Apply 50mm Forehead Head Strap by:               <ol style="list-style-type: none"> <li>a) attach side hook velcro tabs to head flaps with sliders level with front of head flaps, ensuring forehead head strap bottom aligns with bottom of patients eyebrows.</li> <li>b) tighten strap by ensuring pad centered on forehead, placing thumbs on center of forehead, and pulling both ends with equal pressure. Velcro into place.</li> </ol> </li> </ol>	<p>Failure to maintain correct alignment may cause cervical spine hyperflexion or hyperextension injury.</p> <p>Grey head pad is specially designed to improve head comfort</p> <p>Pressure on the collar's chin support may clamp the mouth closed causing a potential airway compromise.</p>
<b><u>PLEASE NOTE:</u></b>	<b>ONLY USE THE NIEJ LIFTING HANDLES IF ABSOLUTELY SURE THE GROIN STRAPS ARE PROPERLY SECURED.</b>	<p>If head is immobilised, but the groin straps are not firm, using the lifting handles may cause a neck stretch with potential cervical spine injury.</p> <p>If head is immobilised and groin straps are loose, lifting the NIEJ may result in neck stretching.</p>

# **NIEJ SKILLSHEET**

## **LIFTING DEVICE APPLICATION**



RAPP AUSTRALIA PTY LTD		
	<b>LIFTING DEVICE APPLICATION OF THE NEANN IMMOBILISATION &amp; EXTRACTION JACKET (NIEJ)</b>	<b>SKILL SHEET</b> NIEJ Version 2.0 27 October 2010
<b>EQUIPMENT REQUIRED:</b> 2 x personnel (2 to apply NIEJ); NIEJ (including jacket, 1 x yellow lumbar support, 2 x blue groin pads).		
Prepare patient.	<ol style="list-style-type: none"> <li>1. If appropriate, remove all bulky items from chest and pelvic pockets.</li> <li>2. Inform and reassure patient of procedure.</li> </ol>	Prevents discomfort of NIEJ.
Prepare NIEJ	<ol style="list-style-type: none"> <li>1. Remove NIEJ from storage bag.</li> <li>2. Open NIEJ flat ready for use.</li> <li>3. Ensure all straps are tightly in place.</li> </ol>	Loose straps will come apart during insertion.
Insert NIEJ behind patient	<ol style="list-style-type: none"> <li>1. Slightly rotate seat back or alternatively lean patient slightly forward of seat.</li> <li>2. Insert NIEJ at a 45 degree angle behind patient.</li> <li>3. Once in behind back, straighten up and ensure NIEJ is centered behind patient.</li> </ol>	Essential for proper stability of NIEJ.
Insert lumbar padding	<ol style="list-style-type: none"> <li>1. Roll up lumbar support pad to remove all air</li> <li>2. Insert deflated lumbar support in curve of lumbar spine.</li> <li>3. Lean patient back onto NIEJ.</li> </ol>	Will assist to maintain natural curvature of lumbar spine, and help prevent lower back pain.
Position NIEJ	<ol style="list-style-type: none"> <li>1. Ensure top of NIEJ is level with top of patients head.</li> </ol>	
Position groin straps	<ol style="list-style-type: none"> <li>1. Release groin straps from back of NIEJ.</li> <li>2. Hold both groin straps together ensuring straps are not twisted.</li> <li>3. Pull groin straps down together between the patient and inside of the chest flap.</li> <li>4. Slide groin straps under one leg, zig zagging straps under leg until straps are in the gluteal fold.</li> <li>5. Pull groin straps full forward and leave.</li> </ol>	Essential for proper stability of NIEJ and to prevent loosening of straps when leg position changes.
Position chest flaps into place.	<ol style="list-style-type: none"> <li>1. Raise arms to level with shoulders.</li> <li>2. Wrap chest flaps around chest.</li> </ol>	To avoid upper spinal movement, do not raise arms above shoulder height.



LIFTING DEVICE APPLICATION OF NIEJ		Page 2 of 2
Apply green shoulder straps (optional step):	<ol style="list-style-type: none"> <li>1. Bring left sided green strap over shoulder and connect to green strap buckle on right side of chest flap. Adjust to firm fit.</li> <li>2. Bring right sided green strap over shoulder and connect to green strap buckle on left side of chest flap. Adjust to firm fit.</li> </ol>	This step is optional and only necessary if patient may be inverted.
Apply yellow chest strap.	<ol style="list-style-type: none"> <li>1. Bring right sided yellow strap across chest and connect to yellow strap buckle.</li> <li>2. Place hand between strap and patients chest. Adjust yellow strap until a firm sensation is felt on hand.</li> </ol>	Overtightening will cause respiratory compromise by up to 25%.
Apply red chest strap.	<ol style="list-style-type: none"> <li>1. Bring right sided red strap across chest and connect to red strap buckle.</li> <li>2. Place hand between strap and patients chest. Adjust red strap until a firm sensation is felt on hand.</li> </ol>	Overtightening may place unnecessary pressure on the abdominal organs.
Connect groin straps.	<ol style="list-style-type: none"> <li>1. Slide a blue groin pad onto each black groin strap.</li> <li>2. Slide blue groin pads along black straps, ensuring blue groin pads contact sub-pubic area.</li> <li>3. Connect black groin straps to bottom black strap buckles on chest flap.</li> <li>4. Adjust black groin straps until firm.</li> </ol>	Padding prevents groin strap discomfort that may occur during the extrication.
Recheck all torso straps.	<ol style="list-style-type: none"> <li>1. Recheck green, yellow, red chest and black groin straps ensuring firm.</li> </ol>	
Lift Patient	<ol style="list-style-type: none"> <li>1. Using the handles supplied, lift the patient.</li> </ol>	

**APPLICATION TIME APPROXIMATELY 2 MINUTES**

**PLEASE NOTE**

The term "Lifting" is limited to manually carrying the patient by rescuers, and short distance vertical non dynamic patient lifts to a maximum of 2m only. The safe working load of the NIEJ is 130 kg. As all plastic side release buckles on CEDs are not rated for weight bearing by the manufacturers of such buckles, it is estimated that each side release buckle has a 65 kg non dynamic (static) load bearing limit. Whilst other CED manufactures may quote higher safe working loads, this is based on the stitching strength and not the weakest point of the CED which is the plastic side release buckle, and is therefore potentially misleading to the customer. The stitching strength and webbing design of the NIEJ is well in excess of other CEDs on the market, but the plastic side release buckles are this weight limiting factor in all CEDs. With the NIEJ using two groin straps secured by plastic side release buckles, the safe working load of the NIEJ and all other CEDs can only be rated to a safe working load of 130 kg. Lifts using the "handles only" should be limited to simplified controlled lifts to a maximum height of 2m as specified in the Australian Standards - Prevention Of Falls 2007. For technical rescue situations requiring vertical lifts above the 2 m as specified in the Australian Standards - Prevention Of Falls 2007, it is recommended that a twin rope system be used for such rescues with a second harness over the NIEJ that complies with the Australian Standard - Harness and Lifelines 1891.1.

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For the latest information on the NIEJ, go to  
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