



NEW ZEALAND

## REPORT

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## TECHNIQUES FOR REDUCING INJURIES IN MACHINE OPERATORS

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With the growth in mechanisation of the logging industry, comes a new set of occupational health issues. One of main issues is the occurrence of occupational overuse syndrome (OOS) in machine operators.

Sitting in a fixed position for any length of time, for example in an excavator or feller-buncher, will lead to muscle tension. When muscles are tense they squeeze the veins cutting off the blood supply to the muscles, this means that oxygen cannot get to the muscles easily and waste cannot be removed. This leads to muscle fatigue, and if this continues for long periods of time an overuse injury may start to develop.

Overuse injuries can take a long time to develop, however, if left unchecked they can become painful and disabling.

This report outlines several ways you can help reduce the risk of overuse syndrome affecting you. The following techniques in this report (rest breaks, micropauses,

working posture and stretches) work best when they are used together.

### 1. REST BREAKS

Build rest breaks into your working day. You should get out of your machine and move around for **5 minutes every hour**. Move around during your breaks, don't just sit down! You could use this time to do a quick machine maintenance check.

Frequent short shifts (one hour on, one hour off) are better both physically and mentally for your body than one long continuous shift.

### 2. MICROPAUSES

A micropause is a short break in work for muscle relaxation. Build micropauses into your work technique, by completely relaxing your arms and hands for 5-10 seconds every 3-5 minutes.

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### 3. WORKING POSTURE

It is important to maintain good posture (body position) while in the machine. When you get into the machine, adjust the seat, arm rests and controls so that they suit you, not the person in the machine before you.

Some basic machine operator body position guidelines are given here.

- Keep your shoulders low and relaxed.
- Keep your elbows in by your side, they should have enough room to move freely.
- Try and keep your wrists straight, in line with your forearms.
- Your back should be well supported by your seat, especially the 'small' of your back.
- Avoid leaning forward or to the side in your seat.

- Sit well back in your seat, so your thighs are supported. Your feet should be flat on the floor without any pressure points on the underside of thighs or calves.

**Don't stay in one position all day!**

### 4. STRETCHES

Stretches are used to stimulate blood flow throughout your body as well as to stretch tendons and relax muscles. A selection of the recommended stretches for machine operators are shown here.

These exercises should be done several times a day, and whenever you feel they are required. It is best to do all of the exercises, stretch small muscles first, then larger muscles.

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#### Stretch 1

Lift your arms out in front of you. Keeping your arms straight, move your hands in circles, first in one direction then in the other.

This is good for wrists and forearms.

**Repeat 5-15 times in each direction.**

#### Stretch 2

Rotate your right shoulder forward, up and back, and then in the opposite direction. Repeat this for your left shoulder. Keep your spine straight and be careful not to move you chest upwards.

This is a good shoulder stretch.

**Repeat 5-15 times on each side.**



**Stretch 3**

Stand or sit with one elbow bent at chest height, with your palm on your chest.

(a.) Extend your other arm out in front of you at shoulder height with your hand turned in and your palm facing away from you.

(a.)



(b.) Now slowly reverse the arms - one hand is pulling in to you, the other pushing away.

(b.)



This is good for your arms and shoulders.

**Repeat slowly 5-15 times.**

**Stretch 4**

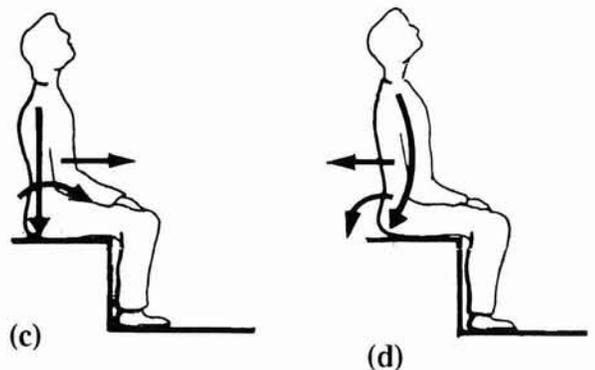
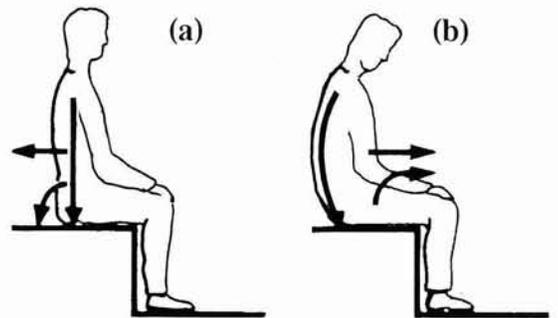
(a) Sit up straight and look straight ahead,

(b) breathe out as you roll your pelvis back and slump to look at your navel.

(c) Then as you breathe in, straighten up, roll your pelvis up and lift your head. When doing this your head and pelvis should move together. As you look up breathe out fully through your mouth.

Your knees should move apart, and your shoulder blades should come together at the back, your chest should expand.

(d) Breathe in as you return to the start position. Do not move forward or back, simply up and down.



This is a good back stretch.

**Repeat 5 times**

**Stretch 5**

Hold one hand in the other then turn palms upwards above your head as you straighten your arms.

You should feel a stretch through your arms and the upper sides of your rib cage.

**Hold for 10-20 seconds, repeat three times.**

**Stretch 6**

Behind your back hold one hand in the other (palms up). Slowly turn your elbows inward while straightening your arms (pulling your shoulder blades together).

This is an excellent stretch for shoulders and arms.

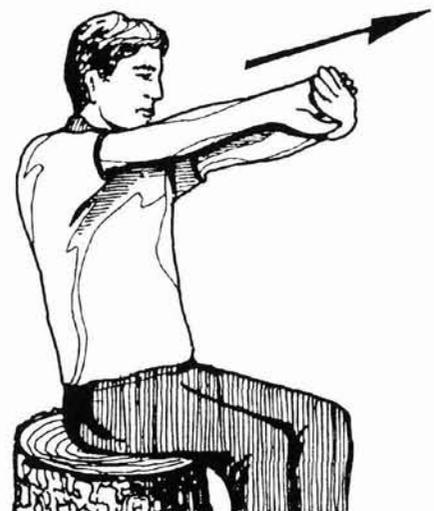
**Hold for 5-15 seconds, repeat twice.**

**Stretch 7**

Holding one hand in the other, straighten your arms in front on you. Your palms should be facing away from you as you do this stretch. (Don't let your shoulders go forward).

Feel the stretch in your arms and through the upper part of your back.

**Hold for 20 seconds, repeat at least twice.**



**Stretch 8**

Lean your head sideways towards your left shoulder as, behind your back, your left hand pulls your right arm down and across. Hold an easy stretch for 10 seconds, repeat on your other side.

This will stretch the side of your neck and top of your shoulders.

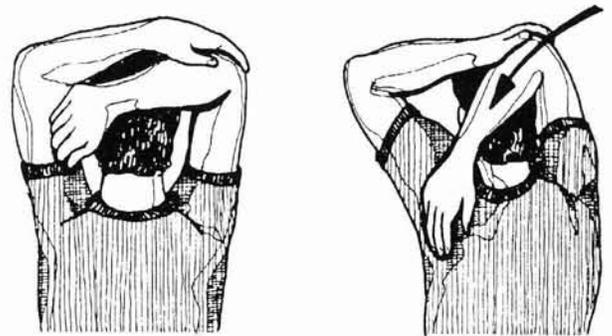
**Repeat 3 times on each side.**

**Stretch 9**

With arms overhead hold the elbow of one arm with the hand of the other arm. Gently pull the elbow behind your head, creating a stretch. Do it slowly, hold for 15 seconds. Repeat on your other side.

This is a simple stretch for your triceps and the top of your shoulders.

**Repeat 3 times on each side.**

**Stretch 10**

Gently pull your elbow across your chest toward your opposite shoulder. Hold stretch for 10 seconds. Repeat on your other side.

This will stretch your shoulder and the middle of your upper back.

**Repeat 3 times on each side.**

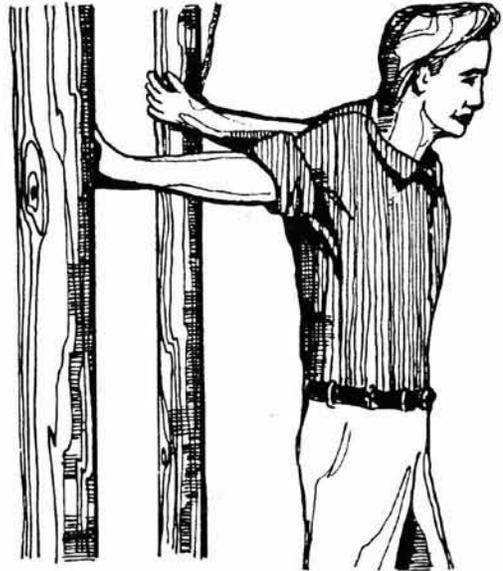


**Stretch 11**

Hold onto both sides of a doorway (the doorway of your smoko hut might be your best option) with your hands behind you at shoulder level. Without moving your feet, let your arms straighten as you lean gently forwards, keep looking straight ahead.

This will stretch your shoulders and chest.

**Hold for 10 seconds. Repeat 3 times.**

**Stretch 12**

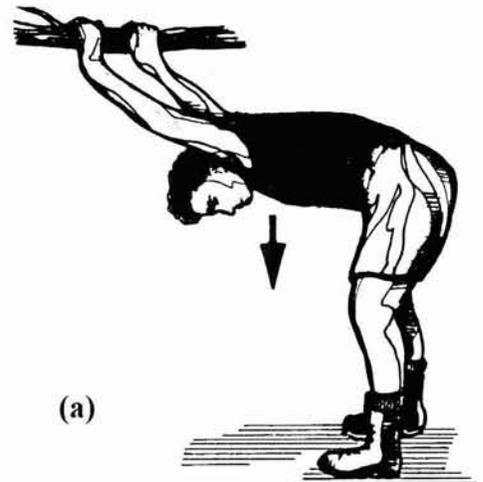
(a) Place both hands shoulder width apart at shoulder height on a ledge. Keeping your knees slightly bent and bending at the waist, keeping your hands above you, let your upper body drop down. (Always bend your knees when coming out of this stretch). Your hips should be directly above your feet.

This is a good upper body and back stretch.

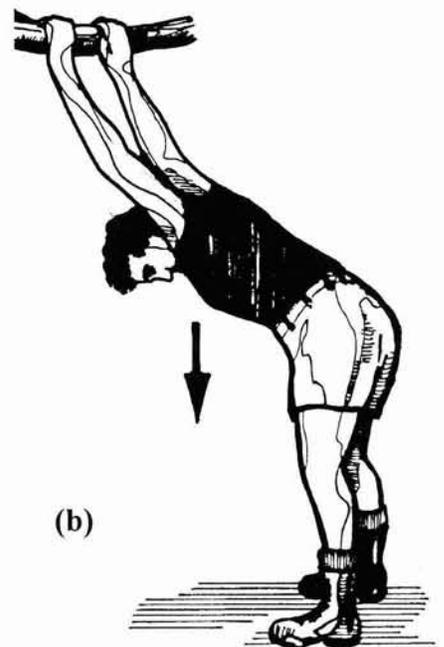
**Repeat 3 times.**

(b) To change the area of the stretch, bend your knees a bit more. Placing your hands at different heights will also change the area of your stretch.

**Repeat 3 times.**



(a)



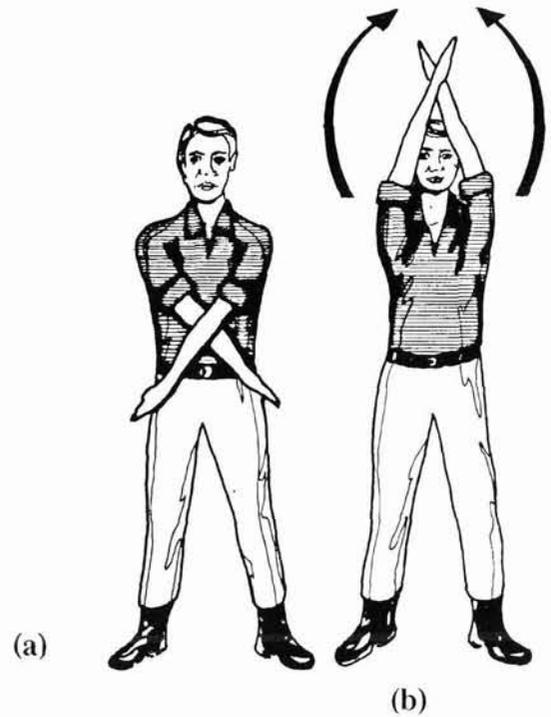
(b)

**Stretch 13**

Stand comfortably with your feet shoulder width apart, dangle your arms loosely at your side.

(a) Breathe in slowly and cross both arms in front of your body feeling the stretch in your shoulder blades.

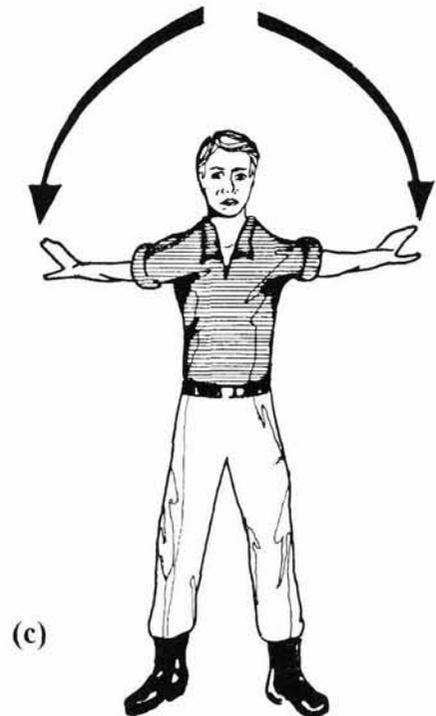
(b) Slowly lift your crossed arms up over your head.



(c) Breathing in and then out slowly, lower both arms slowly behind your body feeling the stretch in your chest muscles.

This is designed to stretch all of your shoulder muscles.

**Repeat 5 - 10 times.**

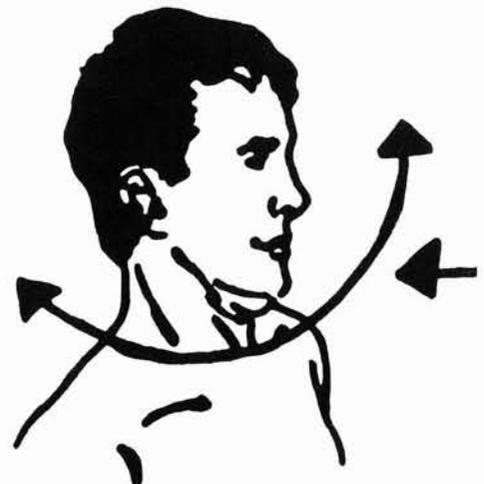
**Stretch 14**

Looking straight ahead pull chin inwards, creating a double chin and gently turn to the left, then the right. You should feel the stretch at the side of your neck.

Pull your shoulders down gently to increase the effectiveness of the stretch.

This will stretch your neck and upper back.

**Repeat 2-3 times.**



## SUMMARY

There are several techniques you can use to help avoid occupational overuse syndrome.

- *Rest Breaks - get out of the machine and move around for five minutes every hour*
- *Micropauses - build these into your work technique by completely relaxing your hands and arms for 5-10 seconds every 3-5 minutes,*
- *Working posture - maintain good postural awareness in the machine*
- *Stretches - these will help to keep your muscles relaxed, and will help reduce muscle fatigue,*

*Finally, remember that if your muscles are relaxed, they will work more efficiently, you will be less prone to injury and you will feel less fatigued.*

Contact LIRO or your local physiotherapist for more information.

*For further information, contact:*

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