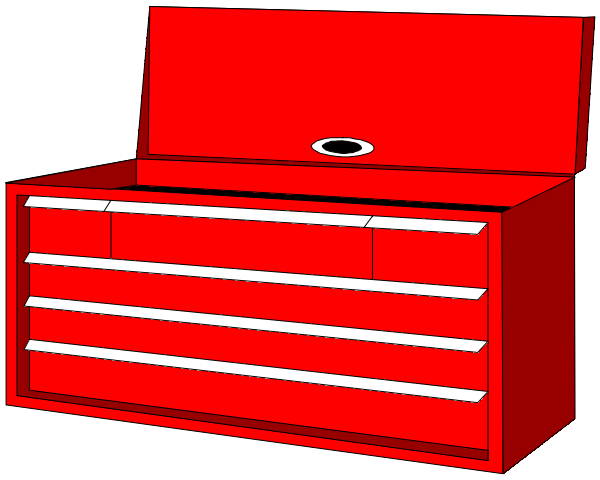
Industrial Musculoskeletal Injury Reduction Program

Common Industry Jobs (CIJs)

Trimmer Puller Tool Kit



IMIRP program coordinated by:

Council of Forest Industries

Industrial Wood & Allied Workers of Canada

Advanced Ergonomics Inc.

In cooperation with the Workers' Compensation Board of British Columbia

TRIMMER PULLER TOOL KIT
Table of Contents

Overview

Trimmer Puller

Job Summary

A Trimmer Puller is responsible for pulling lumber to the proper length to trim for size and defect. Trimmer Pullers may also be required to ensure lugs are fed properly, and to clear any cross-ups or jam-ups that occur on the transfer deck. Waste wood may also be manually pulled off the conveyer and discarded into a waste chute.

Physical Demands

The physical demands of this job may include:

a) Occasional to frequent turning and/or lifting of lumber
b) Frequent forward reaching involving movements of the shoulders, elbows, wrists, and low back
c) Frequent pulling backwards involving awkward and repetitive movements of the shoulder and wrist
d) Frequent back flexion, depending on work technique and workstation design
e) Frequent to occasional use of foot pedals
f) Continuous standing and walking within a limited amount of space

Mental Demands

Workers are required to make a judgement for every board. Rapid decision making is required when determining whether or not to pull lumber to trim for defects and size or to remove waste lumber. Quick response time is also required when clearing cross-ups or jam-ups. Less experienced operators report feeling stressed about making mistakes.

Major Variations

With different mills, the following major variations have been observed:

1) Job rotation occurs:
   a) From one side of the trim saw transfer deck to the other
   b) Between Drop Sorters and Trimmer Pullers
   c) Informally, or not at all

2) Lumber infeed is controlled by:
   a) An unscrambler
   b) Transfer chains

3) Lumber transfer rollers can be:
   a) Powered
   b) Free-rolling
   c) Multiple in number, small in size
   d) Large in size, lesser in number

4) Kickers, pin stops, and transfer decks can be controlled using:
   a) Control panels
   b) Foot pedals
   c) Pull cords

Physical Demands Analysis
Trimmer Puller

PDA General Instructions: Trimmer Puller

The purpose of this PDA is to familiarise healthcare professionals with the physical demands of a Trimmer Puller. This PDA can be used to gather information about an individual's job and to assist in developing a rehabilitation and return-to-work plan. It is not intended for use in claims adjudication.

Where applicable, common industry job data (e.g., hand tools, tasks) have been included in the tables of this document. The information reported was collected from a sample of Trimmer Puller(s) in the BC Sawmill Industry. However, the PDA requires completion by the healthcare professional, with input from the injured worker to highlight tasks that aggravate the injury or prevent the worker from returning to their job. The worker's supervisor may be contacted for further information or verification of tasks.

A PDA should be filled out for each individual worker following an injury. Subsequent changes in the work process may reduce the accuracy of any pre-existing physical demands assessments. The IMIRP Society accepts no responsibility for the use or misuse of this Physical Demands Analysis, or for the accuracy of the PDA as it applies to any specific workplace.

Disclaimer

The IMIRP Society accepts no responsibility for the use or misuse of the PDA, or the accuracy of the PDA as it applies to any specific workplace.

PDA Table of Contents

Physical Demands Analysis
Trimmer Puller

Task List

For each of the tasks listed below, please indicate whether it occurs at your mill.

Manipulate lumber to trim for length and defects

A Trimmer Puller pulls, pushes, or lifts lumber to the appropriate length to be cut by the trim saw, and may also trim defects.

Does this task occur at your mill?

☐ Yes ☐ No

Control transfer deck movement

A Trimmer Puller may use controls on a control panel or use foot pedals to control the flow of lumber on the transfer decks.

Does this task occur at your mill?

☐ Yes ☐ No

Clear jam-ups

A Trimmer Puller manually clears any cross-ups or jam-ups that may occur on the transfer deck.

Does this task occur at your mill?

☐ Yes ☐ No

A Trimmer Puller may use pike poles or picaroons to push or pull lumber to clear jam-ups.

Does this task occur at your mill?

☐ Yes ☐ No

Job Profile

Date: _____

Company Name: _____ Division: _____

Employee Name: _____ Supervisor: _____

Phone: _____ Fax: _____

Is a Return-to-Work (RTW) strategy in place? ☐ Yes ☐ No

If yes, check all that apply: ☐ Modified Job ☐ Modified Worksite ☐ Graduated RTW

Describe:

_____

_____

_____

Length of shift _____ hours

Formal breaks

- ☐ Two 10 minute breaks
- ☐ One 30 minute lunch break
- ☐ Other: _____

Informal breaks

- ☐ Yes, length of break varies
- ☐ Yes, _____minutes/shift

Work pace control

- ☐ Self-paced
- ☐ Time pressure (e.g., completing a task during the 30 minute lunch break)
- ☐ Other: _____

Job rotation

☐ Yes ☐ No

Describe:

_____

_____

_____

_____

Work Organisation

Task Description

The table below contains a list of tasks performed by a Trimmer Puller. Use the left column to check off tasks that are present. Estimate the *Percent of Shift* each task is performed and place a check mark in the appropriate column. The *Comments* section may be used to include information related to duration, frequency, and cycle times. Additional tasks can also be included under *Other*.

	Task	Percent of Shift				Comments
		Rarely 0 to 5%	Occasionally 6 to 33%	Frequently 34 to 66%	Constantly 67 to 100%	
	Manipulate lumber to trim for length and defects					• *Cycle time depends on lug speed*
	Control transfer deck movement					• *Controls can be foot pedals, pull cords, or switches on a console* • *Frequency of use depends on flow of lumber from previous station*
	Clear jam-ups					• *Usually cleared manually, or with a pike pole or picaroon* • *Frequency of jam-ups varies; lumber that is unscrambled prior to the lug loader will have less jam ups*
	Other:					

Workstation Characteristics

Dimensions & Layout

Sketch workstation(s) and indicate relevant measurements, such as working heights and reaches.

Flooring, Displays and Seating

The table below lists several components of a workstation. For *Flooring* and *Displays* there are several options provided. Please indicate all of the options that apply to the workstation. For the *Seating* section, describe and identify the features of the seat, if applicable. The *Comments* section may be used to include additional information, especially any workstation characteristics of concern.

Workstation Characteristics	**Comments**
Flooring *(Check all that apply)* ☐ Cement ☐ Wood ☐ Rubber matting ☐ Metal ☐ Other _____	
Displays *(Check all that apply)* ☐ Lights on console ☐ Mirrors ☐ Video monitors ☐ Computer monitors ☐ Scrolling display ☐ Signal lights ☐ Other: _____	
Seating *(Check all that apply)* ☐ Armrests ☐ Backrest ☐ Swivel seat ☐ Slide track ☐ Lumbar support ☐ Foot rest ☐ Casters # _____ *Indicate if adjustable:* ☐ Height ☐ Armrests ☐ Backrest ☐ Forward tilt	Height of seat: _____ cm Depth of seat: _____ cm Width of seat: _____ cm Covering type: _____

Equipment & Machinery Controls

The table below contains a list of the types of controls used by a Trimmer Puller. Use the left column to check off controls that are present at the work site. Highlight controls that may aggravate the injury, or which the worker finds difficult to use. The *Comments* section may be used to include any additional information. Additional controls can be included under *Other*.

	Type of Control	**Function**	**Comments**
	Foot pedals	• *Operates pin stops, kickers, and controls speed of chains*	• *Foot pedal location may contribute to awkward postures of the low back and shoulder*
	Button controls	• *Operates chains, pin stops, or kickers*	• *Location of console may restrict movement, causing awkward and forceful postures of the low back and shoulder*
	Pull cords	• *Stops chain movement*	• *Pull cords may be located under transfer decks; if used frequently, causes awkward postures of the low back*

Physical Demands

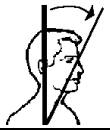
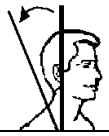
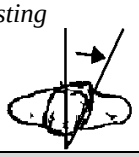
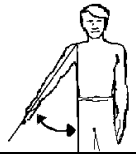
Whole Body Physical Demands

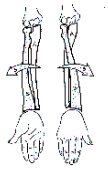
Identify each of the physical demands required by a Trimmer Puller and list the corresponding tasks in the second column. Check off (✓) the estimated *Percent of Shift*, and use the *Comments* section to include information related to duration, frequency, and cycle times.

Physical Demands	Tasks or Activity	Percent of Shift				Comments
		Rarely 0 to 5%	Occasionally 6 to 33%	Frequently 34 to 66%	Constantly 67 to 100%	
Example: Standing	• *Manipulate lumber to trim for length and defects* • *Control transfer deck movement*			✓		• *Moves from side to side within 1 metre area* • *May operate foot pedals while standing*
Walking						
Sitting						
Standing						
Climbing						
Balancing						
Kneeling/ Crouching						
Other:						

Body Postures

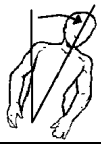
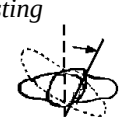
The table below outlines the body postures that may be adopted throughout the shift by a Trimmer Puller, related to tasks. Check off (✓) the estimated *Percent of Shift*, and use the *Comments* section to include information describing posture duration, frequency, cycle times, and hand used.

Body Posture	Task(s)	Percent of Shift				Comments
		Rarely 0 to 5%	Occasionally 6 to 33%	Frequently 34 to 66%	Constantly 67 to 100%	
Example: Shoulder Extension	• *Manipulate lumber to trim for length and defects*		✓			• *5 to 9 times per minute* • *Pulls lumber backward to trim for defects*
Neck						
Flexion 						
Extension 						
Twisting 						
Shoulder						
Flexion 						
Abduction/adduction 						
Extension 						

Body Posture	Task(s)	Percent of Shift				Comments
		Rarely 0 to 5%	Occasionally 6 to 33%	Frequently 34 to 66%	Constantly 67 to 100%	
Forearm						
Rotation 						
Wrist						
Wrist Movements 						
Hand/Fingers						
**Handling*						
**Fingering*						
**Gripping*						

Legend for Hand/Fingers

Handling	*grasping, turning, holding, etc.*			
Fingering	*picking, pinching, etc.*			
Gripping	*Power* 	*Pinch* 	*Hook* 	*Precision* 

Body Posture	Task(s)	Percent of Shift				Comments
		Rarely 0 to 5%	Occasionally 6 to 33%	Frequently 34 to 66%	Constantly 67 to 100%	
Back						
Flexion 						
Lateral Flexion 						
Twisting 						
Extension 						

Manual Material Handling

The table below contains a list of general manual material handling activities performed by a Trimmer Puller. Indicate tasks that require one or more of these activities, and fill in the weight of the objects, or the force required, for each action. Check off (✓) the estimated *Percent of Shift*, and use the *Comments* section to include information related to duration, frequency, cycle times, and characteristics of objects handled. If necessary, please refer to Appendix A to calculate the weight of the wood being handled.

Activity	Task Description	Weight (kg)	Percent of Shift				Comments
			Rarely 0 to 5%	Occasionally 6 to 33%	Frequently 34 to 66%	Constantly 67 to 100%	
Pushing							• *Frequency is higher when trimming for length*
Pulling							• *Frequency depends on quality of lumber and lug speed*
Lifting							• *Occurs mostly when uncrossing lumber on the deck*
Lowering							
Carrying							

Hand Tools

Indicate the hand tools used by a Trimmer Puller by placing a check mark (✓) in the far left column. Determine the weight of the hand tool and enter it in the appropriate column. Check off (✓) the estimated *Percent of Shift*, and use the *Comments* section to include information related to duration, frequency, cycle times, and characteristics of objects handled.

	Type of Tool	Task(s)	Weight (kg)	Percent of Shift				Comments
				Rarely 0 to 5%	Occasionally 6 to 33%	Frequently 34 to 66%	Constantly 67 to 100%	
	Picaroon		*1.5 to 1.7*					
	Pike Pole		*2.0 to 3.9*					

Environmental Conditions

Work Environment

The table below contains a list of environmental conditions that may be of concern. If any of these factors aggravate the injury, describe in the *Comments* section.

Factor	Comments
Vibration (Indicate source) ☐ Seat ☐ Floor ☐ Tool ☐ Other: _____	
Noise level	
Lighting level	
Other:	

Location of Workstation

The table below contains a list of potential work environments. Indicate with a check mark (✓) in the left column which of the work environments apply to the specific workstation. For example, the workstation may be inside a building with both a local fan and heater, exposed to the outside by a doorway that is always open. In this situation, 'Inside exposed', 'Heater present', and 'Fan present' would all be checked.

	Work Environment
	Outside uncovered
	Outside covered
	Inside enclosed
	Inside exposed
	Heater present
	Fan present

Temperature

The table below contains a list of the geographical regions of British Columbia. Indicate the appropriate region with a check mark (✓) in the left column. Refer to the regional map in Appendix B of the PDA.

	Region	Avg. Max July/Aug	Avg. Min Dec/Jan	Extreme Max.	Extreme Min.
	Vancouver Island	22.5 °C	-0.6 °C	36.1 °C	-18.8 °C
	Southwestern BC	22.9 °C	0.4 °C	35.6 °C	-18.3 °C
	Cariboo Chilcotin Coast	22.2 °C	-11.6 °C	36.4 °C	-42.5 °C
	High Country	26.3 °C	-9.9 °C	39.6 °C	-39.7 °C
	Okanagan Similkameen	26.5 °C	-8.4 °C	36.0 °C	-36.3 °C
	Kootenay Country	26.2 °C	-6.7 °C	38.5 °C	-32.0 °C
	British Columbia Rockies	24.7 °C	-12.3 °C	37.5 °C	-42.2 °C
	North by Northwest	19.5 °C	-11.7 °C	32.9 °C	-38.1 °C
	Peace River Alaska Highway	20.0 °C	-20.2 °C	34.6 °C	-47.7 °C

Personal Protective Equipment

The table below contains a list of the personal protective equipment (PPE). For the Trimmer Puller job at your mill, indicate with a check mark (✓) which of the PPE items are required.

	Gloves Type:		Hard Hat		Leather Apron
	Glove Liners		Steel-toed Boots		Dust Mask
	Eye Protection		Hearing Protection		Seat Belt
	Face Shield/Helmet		Life Jacket		Harness
	Knee Pads		Other:		Other:

Appendix A – Weight of Wood Equation

1. Type of Wood Handled

The table below contains a list of the types of wood processed in British Columbia. The weight per board foot wet and dry is given for each species. This information will be used in the table in *Section 4* to calculate the weight of the wood handled. Please indicate all of the types of wood processed.

	Wood Handled	Wet lb./ Board Foot	Dry lb./ Board Foot		Wood Handled	Wet lb./ Board Foot	Dry lb./ Board Foot
	Douglas Fir	3.60	2.83		Larch	3.48	N/A
	Hemlock	3.42	2.49		Spruce/Pine/Fir*	2.95	2.18
	Red Cedar	2.42	2.00		Alpine Fir	2.67	2.00
	Yellow Cedar	3.01	2.49		Lodge Pole Pine	3.26	2.41
	Sitka Spruce	2.76	2.23		White Spruce	2.93	2.15

*The Spruce/Pine/Fir values are an average of White Spruce, Lodge Pole Pine, and Alpine Fir.

2. Size of Wood*

The table below contains a list of different sizes or dimensions of wood. The percentage next to the size of the wood is the multiple used to compare the size of the board to a board foot (1" by 12" by 12"). This multiple will be used in the table in *Section 4* to calculate the weight of wood handled. Please indicate all of the applicable sizes of wood handled at the workstation. Add any other sizes to the bottom of the table if your particular size of wood is not listed.

	1" Sizes	Multiple		2" Sizes	Multiple		4" Sizes	Multiple		6" Sizes	Multiple		8" Sizes	Multiple
	1 by 4	0.33		2 by 4	0.67		4 by 4	1.33		6 by 6	3.00		8 by 8	5.33
	1 by 6	0.50		2 by 6	1.00		4 by 6	2.00		6 by 8	4.00		8 by 10	6.67
	1 by 8	0.67		2 by 8	1.33		4 by 8	2.67		6 by 10	5.00		8 by 12	8.00
	1 by 10	0.83		2 by 10	1.67		4 by 10	3.33		6 by 12	6.00			
	1 by 12	1.00		2 by 12	2.00		4 by 12	4.00						

* Conservative estimates of actual wood dimensions

If the size of the board is different from those in this table, use this equation to find out the multiple value.

[(Dimensions of wood) x 12] / 144 = Multiple
For example: For a 5 by 5 piece of wood [(5x5) x 12]/144 = 2.08

3. Length of Wood

The table below contains a list of the common lengths of wood. Please indicate which of these lengths are being handled at this particular workstation. Add additional lengths to the table if necessary. This information will be used in the table in *Section 4*.

Length of Wood							
	6 foot		12 foot		18 foot		22 foot
	8 foot		14 foot		20 foot		24 foot
	10 foot		16 foot		Other:		Other:

4. Weight of Wood Equation*

The table below is used to calculate the weight of the boards being handled. The weight is calculated by multiplying the species weight/board foot (*Section 1 value*) by the size of wood multiple (*Section 2 value*) and by the length of wood (*Section 3 value*).

Example: For a run of wet Spruce/Pine/Fir, 2" x 4", 16 feet long

2.95 *(wet lb./ board foot)* x **0.67** *(size of wood multiple for 2" x 4")* x **16** *(length of board in feet)* = **32 lbs**.

For the heaviest species handled, enter the lb./board foot value, the multiple for the largest size of this wood, and the largest length of this wood. Multiply these values together to determine the weight of the board in pounds.

For the most common species handled, enter the lb./board foot value, the multiple for the most common size of wood, and the most common length of this wood. Multiply these values together to determine the weight of the board in pounds.

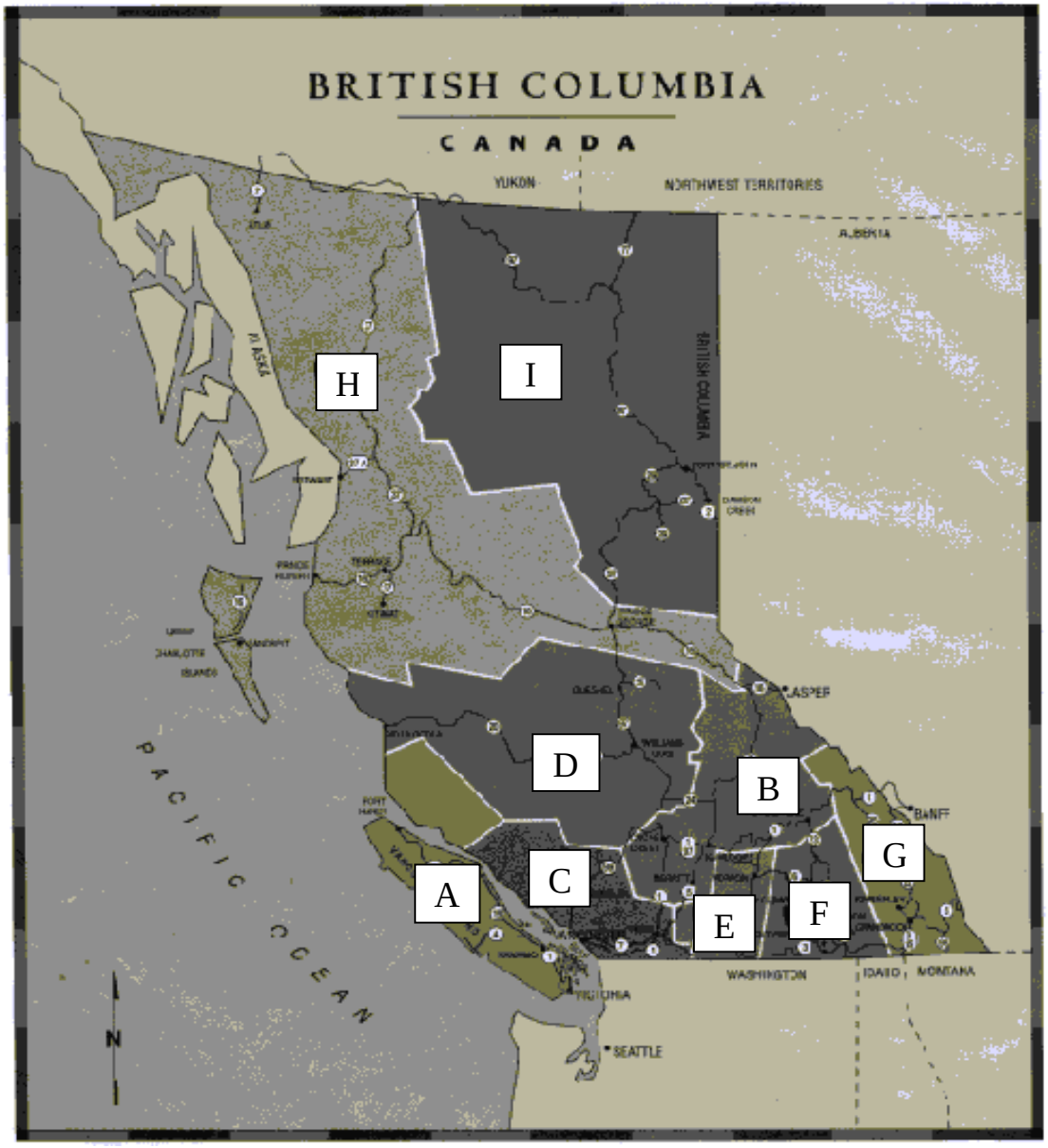
For the lightest species handled, enter the lb./board foot value, the multiple for the smallest size of wood, and the shortest length of this wood. Multiply these values together to determine the weight of the board in pounds.

If required, divide the pound value by 2.2 to obtain the weight of the board in kilograms.

Type of Wood Handled (lb./ board foot) *From Section 1*		**x**	**Multiple (size of wood)** *From Section 2*	**x**	**Length of Wood** *From Section 3*	**=**	**Weight of the Board in pounds**	**Divide by 2.2 to calculate value in kilograms**
Heaviest Species Handled		x		x		=		
Most Common Species Handled		x		x		=		
Lightest Species Handled		x		x		=		

* Weight may vary from the above calculation depending on the cell moisture content of the wood, actual wood dimensions, and wood density.

Appendix B – Regional Map



A - Vancouver Island	**F** - Kootenay Country
B - High Country	**G** - British Columbia Rockies
C - Southwestern BC	**H** - North by Northwest
D - Cariboo Chilcotin Coast	**I** - Peace River Alaska Highway
E - Okanagan Similkameen	

Risk Factor Identification Checklist
Trimmer Puller

Purpose

The Risk Factor Identification Checklist for a Trimmer Puller is used to **identify** potential ergonomic risk factors. Keep in mind that the purpose of this checklist is only to **identify** potential ergonomic risk factors, **not** to assess them.

The checklist can be used as part of your ergonomic intervention process, when workers express concerns about their work environment, during regular workplace inspections and observations, or when conducting an accident or injury investigation. Ideally, management and worker representatives who have completed the IMIRP Occupational Health & Safety Committee and Supervisor Ergonomic Training Session should complete this checklist. Try to view different workers in the same occupation when completing the checklist. Some specific examples are given to help answer the questions.

Instructions

General

Except for the first two questions, all remaining questions will require an answer with an implied frequency. For appropriate questions indicate with a check mark whether the answer to the question is 'No' or **'**Yes'. This way you will have a record indicating that all risk factors have been considered in the identification process.

If you indicate 'No', please continue to the next question. If the question refers to a situation which does not exist (e.g., there is no seating available), please indicate 'No' in the appropriate box and continue to the next question.

If your answer is 'Yes', please check the appropriate box and then circle the frequency ('S' for 'Sometimes' or 'O' for 'Often'). If you answer 'Yes – Sometimes', then this risk factor **may be** a potential area of concern. If you answer 'Yes – Often' then there is an increased likelihood that this risk factor **is** an issue. Each mill will be responsible for defining what 'Sometimes' and 'Often' will mean to them. It is important that all people who complete the checklist are consistent in how they determine if a risk factor occurs 'Sometimes' or 'Often'. Use the 'Comments' section to indicate specific tasks, or to make other notes about the direct risk factors.

Since ergonomic risk factors frequently occur in combinations, you may find similar questions in different sections. Answering all questions will ensure that the situations that involve combinations of ergonomic risk factors are identified. It is very important to recognise all risk factors that occur in the work area.

Please note that for some of the questions it will be beneficial to ask the worker for their input. Please take the opportunity to include the operator in the risk factor identification process as much as possible. Videotaping the job of interest and reviewing the checklist in a quiet area with the worker may allow for more discussion.

Summary Tables

At the end of each body part section, summarise your findings in the table provided. If any of the direct risk factor sections contain a 'Yes', indicate 'Yes' in the appropriate section of the summary table. Answer the questions referring to injury statistics and discomfort survey findings. If there are only 'No' answers in a direct risk factor section, indicate 'No' in the summary table for that section. Use the summary information to determine how you will use the Work Manual.

Risk Factor Identification Checklist – Trimmer Puller

Management Representative _____

Worker Representative _____

Date _____

Risk Identification completed:

☐ Before implementation of solutions
☐ After implementation of solutions

	Job History	No	Yes	Comments
1	Are there records of musculoskeletal injuries or accidents to indicate a risk of musculoskeletal injury? (refer to Worksheet 1 in Implementation Guide)			
2	Are there worker comments to indicate a risk of musculoskeletal injuries? (refer to Worksheet 2 in Implementation Guide)			

Definitions

Force: Force is the amount of physical effort required by the person to do a task and/or maintain control of tools and equipment. The effort depends on the type of grip, object weight and dimensions, body posture, type of activity, surface of the object, temperature, vibration, duration of the task, and number of repetitions.

Repetition: Repetition is defined as similar or the same motions performed repeatedly. The severity of risk depends on the frequency of repetition, speed of the movement or action, the number of muscle groups involved, and the required force. Repetition is influenced by machine or line pacing, incentive programs, piecework, and deadlines.

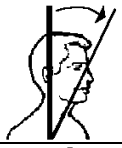
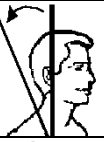
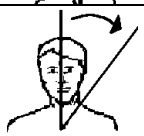
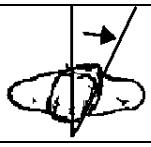
Static Postures: Static loading (sustained exertions) is physical effort (body postures) that is held, requiring muscle contraction for more than a short time.

Contact Stress: Contact stress is the contact of the body with a hard surface or edge. Contact stress can also result when using a part of the body as a hammer or striking instrument.

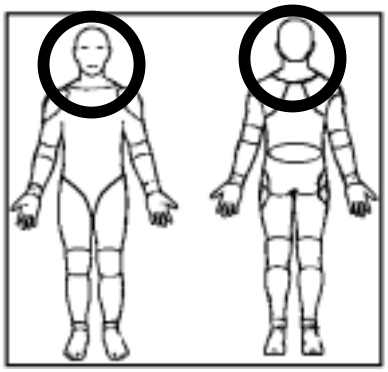
Awkward Postures: Awkward postures occur when there is a deviation from a power working posture. Some examples of awkward postures typically include reaching behind, twisting, working overhead, and forward or backward bending.

Vibration: Vibration is oscillation of a tool or surface. Vibration can be transmitted through the arm or through the whole body.

NECK

Repetition		N	Y		Comments:
Are identical or similar motions performed over and over again? (e.g., pulling or turning lumber)				S O	
Ask the worker: Do you spend a large percentage of the day performing one action or task? (e.g., looking to one side repeatedly)				S O	
Static Posture					
Ask the worker: Do tasks require your neck or shoulders to be maintained in a fixed or static posture? (e.g., looking down or to one side to watch the flow of lumber)				S O	
Awkward Posture					
Flexion				S O	
Extension				S O	
Lateral Bending				S O	
Rotation				S O	

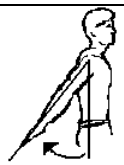
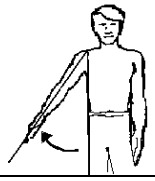
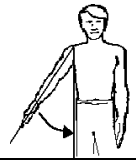
Please indicate whether the following direct risk factors were identified at the **NECK**.		
Direct Risk Factors	Repetition	☐Yes ☐No
	Static Posture	☐Yes ☐No
	Awkward Posture	☐Yes ☐No
In the **Injury Statistics** investigation, were there injury reports for the Neck or Head/Eye or Upper Back? (see Worksheet 1 in the Implementation Guide)		☐Yes ☐No
In the **Discomfort Survey** investigation, were there reports of discomfort for the Neck or Head/Eye or Upper Back? (see Worksheet 2 in the Implementation Guide)		☐Yes ☐No



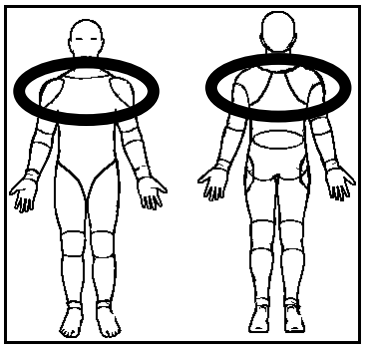
Body parts within the circled area will be classified as NECK issues.

SHOULDER

Force	N	Y		Comments:
Is forceful physical handling performed? Such as: Lifting			S O	
Lowering			S O	
Pushing			S O	
Pulling			S O	
Carrying			S O	
Repetition				
Are identical or similar motions performed over and over again? (e.g., reaching forward to handle lumber)			S O	
Ask the worker: Do you spend a large percentage of the day performing one action or task? (e.g., pulling lumber to be trimmed)			S O	
Static Posture				
Ask the worker: Do tasks require your shoulders to be maintained in a fixed or static posture? (e.g., reaching forward at low table height)			S O	
Ask the worker: Do you hold parts, tools, or objects for long periods?			S O	

Awkward Posture		N	Y		Comments:
Flexion				S O	
Extension				S O	
Abduction				S O	
Adduction				S O	

Please indicate whether the following direct risk factors were identified at the **SHOULDER**.		
Direct Risk Factors	Force	☐Yes ☐No
	Repetition	☐Yes ☐No
	Static Posture	☐Yes ☐No
	Awkward Posture	☐Yes ☐No
In the **Injury Statistics** investigation, were there injury reports for the Shoulder or Neck or Upper Back? (see Worksheet 1 in the Implementation Guide)		☐Yes ☐No
In the **Discomfort Survey** investigation, were there reports of discomfort for the Shoulder or Neck or Upper Back? (see Worksheet 2 in the Implementation Guide)		☐Yes ☐No



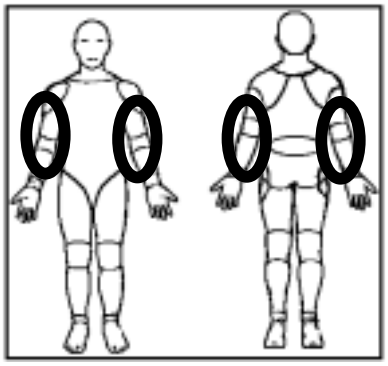
Body parts within the circled area will be classified as SHOULDER issues.

ELBOW

Force	N	Y		Comments:
Is forceful physical handling performed? Such as: Lifting			S O	
Lowering			S O	
Pushing			S O	
Pulling			S O	
Carrying			S O	
Turning materials			S O	
Are objects handled in a power grip? (e.g., picaroon) 			S O	
Are objects handled in a pinch grip? (e.g., lumber) 			S O	
Are objects handled in a hook grip? (e.g., wide pieces of lumber 2"x10" or 2"x12") 			S O	
Ask the worker: Do you wear gloves while performing your job? If the answer is **No**, check the **No** box and go to next section.		*	S O	
*If the answer to the above question is **Yes**, ask the worker: Are the gloves too large/small?			S O	
Does the thickness of the gloves cause problems with gripping?			S O	
Repetition				
Are identical or similar motions performed over and over again? (e.g., gripping and turning lumber)			S O	
Ask the worker: Do you spend a large percentage of the day performing one action or task? (e.g., turning lumber)			S O	

Static Posture	N	Y		Comments:
Ask the worker: Do tasks require your hand and arm to be maintained in a fixed or static posture? (e.g., reaching for controls on console)			S O	
Ask the worker: Do you apply constant pressure on controls/objects with your hand? (e.g., resting your hand or wrist on an edge of a console)			S O	
Ask the worker: Do you hold parts, tools, or objects for long periods? (e.g., pike poles or picaroons)			S O	
Contact Stress				
Ask the worker: Do **any** objects, tools or parts of the workstation put pressure on **any** parts of your hand or arm, such as the backs or sides of fingers, palm or base of the hand, forearm, elbow?			S O	
Vibration				
Ask the worker: Is vibration transmitted to your hand through a tool or piece of equipment?			S O	

Please indicate whether the following direct risk factors were identified at the **ELBOW**.		
Direct Risk Factors	Force	☐Yes ☐No
	Repetition	☐Yes ☐No
	Static Posture	☐Yes ☐No
	Contact Stress	☐Yes ☐No
	Vibration	☐Yes ☐No
In the **Injury Statistics** investigation, were there injury reports for the Elbow or Forearm? (see Worksheet 1 in the Implementation Guide)		☐Yes ☐No
In the **Discomfort Survey** investigation, were there reports of discomfort for the Elbow or Forearm? (see Worksheet 2 in the Implementation Guide)		☐Yes ☐No



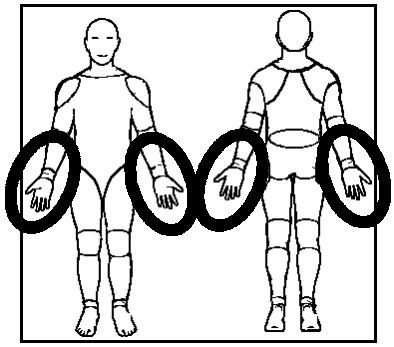
Body parts within the circled area will be classified as ELBOW issues.

WRIST/HAND

Force	N	Y		Comments:
Is forceful physical handling performed? Such as: Lifting			S O	
Lowering			S O	
Pushing			S O	
Pulling			S O	
Carrying			S O	
Turning materials			S O	
Are objects handled in a power grip? (e.g., picaroon) 			S O	
Are objects handled in a pinch grip? (e.g., lumber) 			S O	
Are objects handled in a hook grip? (e.g., flipping boards) 			S O	
Ask the worker: Do you wear gloves while performing your job? If the answer is **No**, check the **No** box and go to next section.		*	S O	
*If the answer to the above question is **Yes**, ask the worker: Are the gloves too large/small?			S O	
Does the thickness of the gloves cause problems with gripping?			S O	
Repetition				
Are identical or similar motions performed over and over again? (e.g., gripping lumber)			S O	
Ask the worker: Do you spend a large percentage of the day performing one action or task? (e.g., turning boards)			S O	

Static Posture	N	Y		Comments:
Ask the worker: Do tasks require any part of your arm or hand to be maintained in a fixed or static posture?			S O	
Ask the worker: Do you apply constant pressure on controls/objects with your hand? (e.g., holding controls)			S O	
Ask the worker: Do you hold parts, tools, or objects for long periods?			S O	
Contact Stress				
Ask the worker: Do **any** objects, tools or parts of the workstation put pressure on **any** parts of your hand or arm, such as the backs or sides of fingers, palm or base of the hand, forearm? (e.g., hand tools that dig into the palm of the hand)			S O	
Ask the worker: Do you use your hand like a hammer for striking? (e.g., unjamming lumber)			S O	
Awkward Posture				
Flexion 			S O	
Extension 			S O	
Ulnar Deviation 			S O	
Radial Deviation 			S O	
Vibration				
Ask the worker: Is vibration transmitted to your hand through a tool or piece of equipment?			S O	

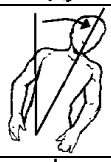
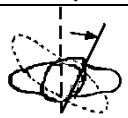
Please indicate whether the following direct risk factors were identified at the **WRIST/HAND**.		
Direct Risk Factors	Force	☐Yes ☐No
	Repetition	☐Yes ☐No
	Static Posture	☐Yes ☐No
	Contact Stress	☐Yes ☐No
	Awkward Posture	☐Yes ☐No
	Vibration	☐Yes ☐No
In the **Injury Statistics** investigation, were there injury reports for the Wrist or Hand/Finger or Forearm? (see Worksheet 1 in the Implementation Guide)		☐Yes ☐No
In the **Discomfort Survey** investigation, were there reports of discomfort for the Wrist or Hand/Finger or Forearm? (see Worksheet 2 in the Implementation Guide)		☐Yes ☐No



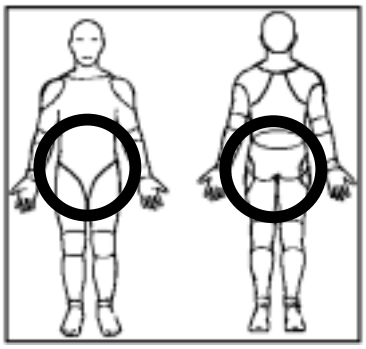
Body parts within the circled area will be classified as WRIST issues.

LOW BACK OR HIP/THIGH

Force	N	Y		Comments:
Is forceful physical handling performed? Such as: Lifting			S O	
Lowering			S O	
Pushing			S O	
Pulling			S O	
Carrying			S O	
Repetition				
Are identical or similar motions performed over and over again? (e.g., bending over to reach for lumber)			S O	
Ask the worker: Do you spend a large percentage of the day performing one action or task? (e.g., turning boards)			S O	
Static Posture				
Ask the worker: Do tasks require your trunk and upper body to be maintained in a fixed or static posture? (e.g., reaching forward at low table height)			S O	
Are workers required to sit or stand in a stationary position for long periods of time during the shift?			S O	
Contact Stress				
Ask the worker: Do **<u>any</u>** objects, tools or parts of the workstation put pressure on **<u>any</u>** parts of your hip/thigh? (e.g., conveyors that dig into the hip or thigh)			S O	

Awkward Posture		N	Y		Comments:
Flexion				S O	
Extension				S O	
Lateral Bending				S O	
Twisting				S O	
Vibration					
Ask the worker: Is your whole body exposed to vibration for significant portions of the work shift? (e.g., standing on catwalks and machinery)				S O	

Please indicate whether the following direct risk factors were identified at the **LOW BACK or HIP/THIGH**.		
Direct Risk Factors	Force	☐Yes ☐No
	Repetition	☐Yes ☐No
	Static Posture	☐Yes ☐No
	Contact Stress	☐Yes ☐No
	Awkward Posture	☐Yes ☐No
	Vibration	☐Yes ☐No
In the **Injury Statistics** investigation, were there injury reports for the Low Back or Hip/Thigh? (see Worksheet 1 in the Implementation Guide)		☐Yes ☐No
In the **Discomfort Survey** investigation, were there reports of discomfort for the Low Back or Hip/Thigh? (see Worksheet 2 in the Implementation Guide)		☐Yes ☐No

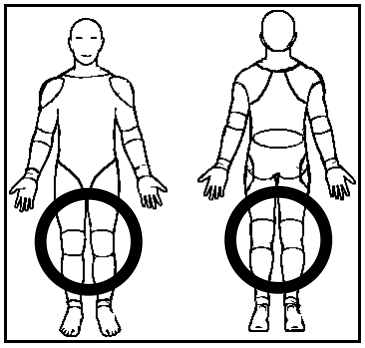


Body parts within the circled area will be classified as LOW BACK issues.

KNEE

Repetition	N	Y		Comments:
Are identical or similar motions performed over and over again? (e.g., climbing stairs, crouching)			S O	
Static Posture				
Ask the worker: Do tasks require you to maintain your knee(s) in a fixed or static posture? (e.g., working under equipment)			S O	
Are workers required to sit or stand in a stationary position for long periods of time during the shift?			S O	
Do workers kneel (with one or both knees)?			S O	
Contact Stress				
Ask the worker: Do **any** objects or parts of the workstation put pressure on your knee(s)? (e.g., kneeling on a catwalk)			S O	
Awkward Posture				
Extreme Flexion 			S O	

Please indicate whether the following direct risk factors were identified at the **KNEE**.		
Direct Risk Factors	Repetition	☐Yes ☐No
	Static Posture	☐Yes ☐No
	Contact Stress	☐Yes ☐No
	Awkward Posture	☐Yes ☐No
In the **Injury Statistics** investigation, were there injury reports for the Knee or Hip/Thigh? (see Worksheet 1 in the Implementation Guide)		☐Yes ☐No
In the **Discomfort Survey** investigation, were there reports of discomfort for the Knee or Hip/Thigh? (see Worksheet 2 in the Implementation Guide)		☐Yes ☐No

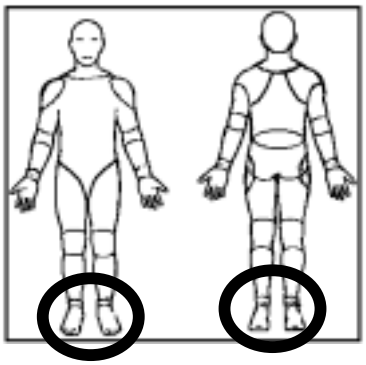


Body parts within the circled area will be classified as KNEE issues.

ANKLE/FOOT

Repetition	N	Y		Comments:
Are identical or similar motions performed over and over again? (e.g., operating foot pedals)			S O	
Static Posture				
Are workers required to stand in a stationary position for long periods of time during the shift?			S O	
Awkward Posture				
Flexion 			S O	
Extension 			S O	
Vibration				
Ask the worker: Is your whole body exposed to vibration for significant portions of the work shift? (e.g., standing on catwalks and machinery)			S O	

Please indicate whether the following direct risk factors were identified at the **ANKLE/FOOT**.		
Direct Risk Factors	Repetition	☐Yes ☐No
	Static Posture	☐Yes ☐No
	Awkward Posture	☐Yes ☐No
	Vibration	☐Yes ☐No
In the **Injury Statistics** investigation, were there injury reports for the Ankle or Foot? (see Worksheet 1 in the Implementation Guide)		☐Yes ☐No
In the **Discomfort Survey** investigation, were there reports of discomfort for the Ankle or Foot? (see Worksheet 2 in the Implementation Guide)		☐Yes ☐No



Body parts within the circled area will be classified as ANKLE/FOOT issues.

CHARACTERISTICS OF OBJECTS BEING HANDLED

	N	Y		Comments:
Are there problems handling a load due to its size or shape?			S O	
Are there problems handling a load due to its fragile, unbalanced, or non-rigid conditions? (e.g., longer lumber pieces)			S O	
Ask the worker: Do you experience situations where mechanical aids or equipment are not readily available to assist with manipulating an object?			S O	
Are handles for tools and equipment inappropriate in terms of size or shape?			S O	
Ask the worker: Do any objects that you work with (other than tools or equipment) have handles? If the answer is **No**, check the **No** box and go to the next section.			S O	
If the answer to the above question is **Yes**, ask the worker: Are the handles an inappropriate size or shape for the characteristics of the object?			S O	

ENVIRONMENTAL CONDITIONS

Temperature				
Ask the worker: Are your hands or arms exposed to cold from exhaust air, cold liquids or solids?			S O	
Ask the worker: Are you exposed directly to temperature extremes that may cause you to use more force or cause you to fatigue quicker than normal? (e.g., hot or cold, either by equipment or natural environment)			S O	
Lighting				
Ask the worker: Do you assume awkward postures to overcome problems associated with glare, inadequate lighting, or poor visibility?			S O	

ENVIRONMENTAL CONDITIONS [CONTINUED]

Noise	N	Y		Comments:
Have there been complaints on the level of noise in the work area?			S O	
Ask the worker: Are there any distracting or annoying noises at the workstation? (e.g., alarms, whistles)			S O	

WORK ORGANISATION

	N	Y		Comments:
Is the work externally-paced or controlled by a machine or the process? (e.g., pace of drop sorter)			S O	
Do peak workloads or sudden increases in pace occur with the tasks?			S O	
Ask the worker: Are there indications of excessive fatigue or pain, or symptoms of adverse health effects due to extended work days or overtime?			S O	
Ask the worker: Are there indications of excessive fatigue or adverse health effects due to shiftwork?			S O	
Ask the worker: Are rest periods or task variety insufficient to prevent the build-up of fatigue or the risk of adverse health effects?			S O	
Ask the worker: Are tasks in a job rotation program similar to one another, and therefore not providing a variation in movements?			S O	

Work Manual

Industrial
Musculoskeletal
Injury
Reduction
Program

Trimmer Puller

This Work Manual contains information about the body parts found to be at risk of musculoskeletal injury (MSI) for the Trimmer Puller (Injury Education), and how to reduce the risk of MSIs using various control measures (Injury Prevention). Each Work Manual is intended to help Occupational Health and Safety Committee members establish effective solutions to reduce MSIs, and as a resource for workers to understand the MSI risks that they may encounter on the job.

The Body Manual, referenced throughout the Work Manual, is a separate document that contains information on how to prevent common MSIs through exercise. Please note exercises described in the Body Manual should only be used after consulting a healthcare practitioner.

The General Risk Factor Solutions Manual, referenced throughout the Work Manual, is a separate document that contains general, preventative information on Environmental Conditions and Work Organisation issues.

Work Manual

Trimmer Puller

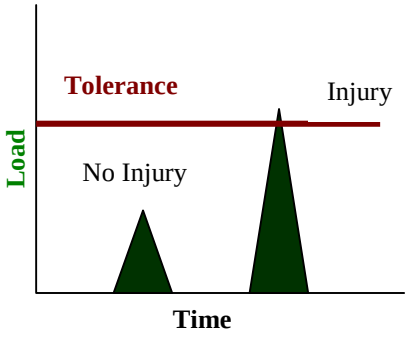
Disclaimer

The BC sawmill IMIRP documents were developed by Advanced Ergonomics Inc. (AEI) based on analyses conducted in a number of voluntary, participating sawmills in British Columbia and should be considered applicable only to the BC sawmill industry. Modification to these documents may reduce their usefulness and/or lead to hazardous situations. Individuals or committees wishing to make Physical Demands Analyses (PDAs) site-specific, or wishing to implement options from the Work Manuals, are advised to first complete the two-day OHSC and Supervisors Ergonomics Training Session. Modifications to a PDA must be within the scope of competence of those individuals making the changes and must be reported to any rehabilitation professional using the PDA. Neither AEI nor the IMIRP Society accepts any responsibility for the use or misuse of these documents.

WM Table of Contents

Injury Education

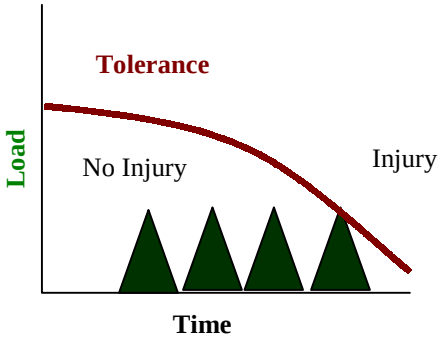
Injuries occur when …
Loads exceed tissue tolerances



Excessive Force

This type of injury occurs from a single event, where the loads or forces are so great they exceed tissue tolerances and cause an immediate injury. This type of injury is more common with trips and falls.

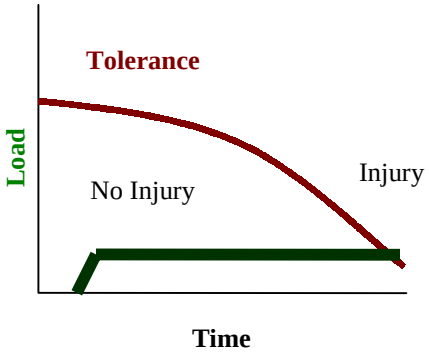
Example – a worker going over on their ankle and spraining it.



Excessive Repetition

This type of injury occurs from repeated loading weakening tissue to the point of failure. It progresses slowly to the point where a subfailure load can cause an injury. This type of injury is more common with repetitive tasks.

Example – a worker pulling lumber off a chain developing a herniated disc.



Excessive Duration

This type of injury occurs from constant loading weakening tissue to the point of failure. This type of injury is more common with tasks that require workers to adopt static or awkward postures for extended periods.

Example – a Grader developing neck tension.

Body Parts at Risk

The previous page on injury education explains how injuries can occur. The Injury Education section of this Work Manual expands on these principles, relating them to the specific body parts at risk of being injured.

After all of the appropriate information is collected during the investigation of the Trimmer Puller job (i.e., injury statistics, discomfort surveys, results from the Identification Checklist), the next steps are to:

1. Match the body parts of concern from your investigation to those described in this section of the Work Manual.

2. Note the direct risk factors associated with each body part of concern.

3. Read the information on the page and try to understand why a body part, in combination with each of the direct risk factors, is of concern.

4. Discover which indirect risk factors are associated with a particular body part problem and the headings under which they are found in the Injury Prevention section of the Work Manual.

5. Note the consequences of the direct risk factor relative to a body part.

6. Note where the potential solutions can be found within the Injury Prevention section of the Work Manual. In addition, for many of the body parts, a reference may be provided to refer to specific sections of the Body Manual.

At the end of the Body Parts at Risk Section, there is a summary page of all the body parts of concern for the Trimmer Puller. In addition, a reference table, with a summary of the direct and indirect risk factors by body part, is provided.

In the last section on Injury Prevention, the Work Manual discusses specific solution options for each of the body parts at risk.

Major Risk Identification

IMIRP ergonomists have assessed the Trimmer Puller position and found that the shoulder, wrist, and low back are the body parts of major concern while performing the duties. Focussing on solutions that target the areas of major concern will likely reduce the greatest risks associated with this job.

Shoulder: Major risks include repetitive and awkward postures of the shoulder while handling lumber to trim for length and defects, and clearing jam-ups.

The following solutions are targeted at reducing the risk of injury to the shoulder:

1. Remove or recess objects (page 67)
2. Picaroon and pike pole use (page 67)
3. Transfer deck (page 68)
4. Small multiple rollers (page 70)
5. Maintenance of rollers (page 70)
6. Alternate sides of work area (page 74)

Wrist: Major risks include forceful and repetitive gripping of lumber, sometimes involving awkward postures of the wrist.

The following solutions are targeted at reducing the risk of injury to the wrist:

1. Maintenance of rollers (page 70)
2. Modify tool handles (page 73)
3. Properly fitted gloves (page 73)

Low Back: Major risks include repetitive bending while handling lumber to trim for length and defects, and clearing jam-ups. This risk is of more concern for tall workers, or when the working surface is too low.

The following solutions are targeted at reducing the risk of injury to the low back:

1. Transfer deck (page 68)
2. Worker platform (page 68)
3. Stretch break for the back (page 69)
4. Maintenance of rollers (page 70)

For additional stretching and strengthening exercises that would benefit a Trimmer Puller, refer to the Shoulder, Wrist, and Low Back sections of the Body Manual.

NECK

Direct Risk Factors:
Awkward Posture
Repetition

A Trimmer Puller may look to the side in order to view lumber flow and watch for cross-ups.

BACKGROUND INFORMATION

- A number of smaller muscles around the neck produce the forces necessary to support and move the head. These muscles remain relatively relaxed when the head is balanced over the spine (neutral posture). The neutral posture occurs when the head is upright and the ears and shoulders are aligned.

DIRECT RISK FACTORS

Awkward Posture

- Neck muscles are required to turn the head to the side. The farther the head is turned to the side, the greater the load on the muscles and tendons.
- Neck muscles must support the weight of the head while in a side bent position. The more the neck bends, the greater the load on the muscles and tendons.

Repetition

- When the head is repeatedly turned to the side, the muscles of the neck are subjected to repeated stress with little time for recovery. If the repetitive stress is excessive, and recovery is not adequate, the tissues can fatigue to the point of injury.

INDIRECT RISK FACTORS

Workstation Design

Additional Workstation Design Options

- Loading on the neck muscles is increased because the orientation of the worker, with respect to the infeed and outfeed, requires the operator to repeatedly turn their head from side to side in order to monitor lumber flow and watch for cross-ups.

CONSEQUENCES

- When the head is repeatedly in a twisted posture, muscles and soft tissues of the neck may fatigue. Fatigue leads to an accumulation of waste products and/or a decrease in the ability to tolerate additional stress.
- Signs and symptoms include pain, tenderness, muscle spasm in the neck area, and headaches.

SUGGESTED SOLUTIONS

- For specific solutions that may prevent injuries to the Neck, please see the column labelled “Neck” in the Summary of Solutions on pages 75 & 76.
- For exercises that can help to prevent ***neck*** injuries, see the ***Neck section of the Body Manual.***

SHOULDER

Direct Risk Factors:
Force
Awkward Posture
Repetition

A Trimmer Puller may pull, push, lift, and turn various sizes of lumber to trim for defects and/or length.

BACKGROUND INFORMATION

- The shoulder joint is designed for mobility. The joint is held together by muscles and soft tissues. The larger muscle groups around the shoulder are responsible for producing movement (e.g., deltoids). The deeper muscles stabilise the shoulder joint as well as produce movement. These deeper muscles and their tendons are referred to as the rotator cuff.

DIRECT RISK FACTORS

Force

- The rotator cuff stabilises the shoulder joint when objects are pushed, pulled, lifted or manipulated. The heavier the object, or the larger the force required, the greater the load on the rotator cuff.
- If the force placed on the rotator cuff exceeds the tissue tolerances, injury may occur.

Awkward Posture

- The rotator cuff stabilises the shoulder joint when the arms are away from the body. The farther away the arms are from the body, the greater the load on the rotator cuff.

Repetition

- When the arms are repeatedly raised, the rotator cuff is subjected to repeated stress with little time for recovery. If the repetitive stress is excessive, and recovery is not adequate, the tissues may fatigue to the point of injury.

INDIRECT RISK FACTORS

Workstation Design

Working Reaches

- Loading on the shoulder muscles and joint is increased when lumber pulling, pushing, lifting, and turning is performed away from the body. The farther the distance from the body, the larger the load on the shoulder joints. Interference from foot pedals or table design may prevent workers from getting closer to lumber.

Working Heights

- Loading on the muscles of the shoulder and neck is increased when the height of table is too high, forcing workers to elevate their shoulders and work with raised arms. The higher the table the greater the load on the shoulders, neck, and upper back.

Additional Workstation Design Factors

- Loading on the shoulder muscles and joints may be increased if rollers are poorly maintained, or if the operator must work against power rollers.

CONSEQUENCES

- When using the arms to push, pull, lift and/or turn boards, the rotator cuff may fatigue. Fatigue leads to an accumulation of waste products and/or a decrease in the ability to tolerate additional stress.
- Stressing a fatigued shoulder may lead to degeneration or injury in the rotator cuff muscles of the shoulder joint.
- Signs and symptoms include pain, tenderness, and decreased range of motion and strength in the shoulder joint.

SUGGESTED SOLUTIONS

- For specific solutions that may prevent injuries to the Shoulder, please see the column labelled “Shoulder” in the Summary of Solutions on pages 75 & 76.
- For exercises that can help to prevent ***shoulder*** injuries, see the ***Shoulder section of the Body Manual.***

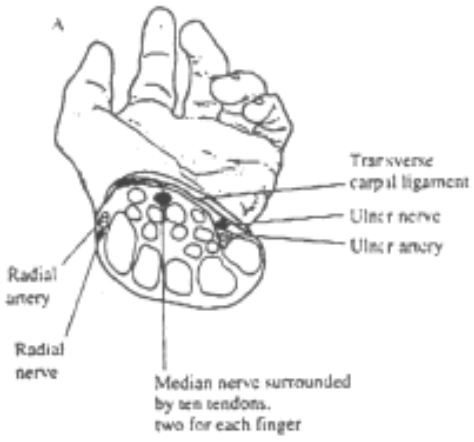
WRIST

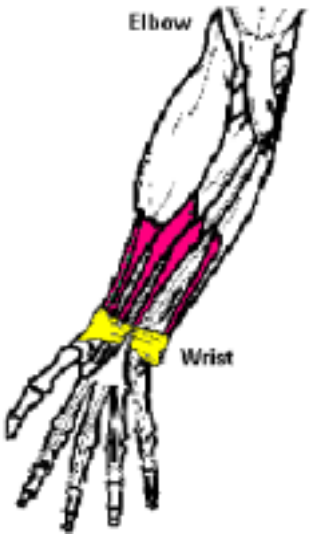
Direct Risk Factors:
Force
Awkward Posture
Repetition

A Trimmer Puller may grip with the wrist bent to push, pull, lift, or turn lumber.

BACKGROUND INFORMATION

- Most of the muscles involved in gripping and manoeuvring the hands are found in the forearms. These muscles attach at the elbow and their tendons (surrounded by a protective sheath) run down the forearm into the hand. At the wrist, the tendons and a nerve run under a thick band (see pictures below), which forms the roof of the carpal tunnel.





The Carpal Tunnel

DIRECT RISK FACTORS

Force

- Gripping an object requires activation of the forearm muscles, which generates tension in the tendons and tendon sheaths running through the wrist. The harder an object is gripped, the greater the tension in the tendons. As tension increases, the pressure within the carpal tunnel may also increase.

Awkward Posture

- As the wrist is bent, the tendon sheaths will rub up against the walls of the carpal tunnel. The farther the wrist is bent, the more friction experienced in the tendon sheaths.

Repetition

- Repeated gripping and/or repeated bending of the wrist causes stress to the tendon sheaths. If the repetitive stress is excessive, and recovery is not adequate, the tendon sheaths may fatigue to the point of injury.

INDIRECT RISK FACTORS

Characteristics of Objects Being Handled

Size and Shape

- Loading on the tissues of the wrist is increased when gripping lumber with a pinch grip. Loading is also increased when the wrist is in a bent posture (up, down, or to either side). Larger pieces of lumber require larger pinch grip spans further increasing loading on the tissues of the hand and wrist.

CONSEQUENCES

- Repeatedly gripping objects with the wrist bent may lead to irritation and damage in the tendon sheaths.
- Signs and symptoms include pain, tenderness, and inflammation in the wrist area.

SUGGESTED SOLUTIONS

- For specific solutions that may prevent injuries to the Wrist, please see the column labelled “Wrist” in the Summary of Solutions on pages 75 & 76.

LOW BACK

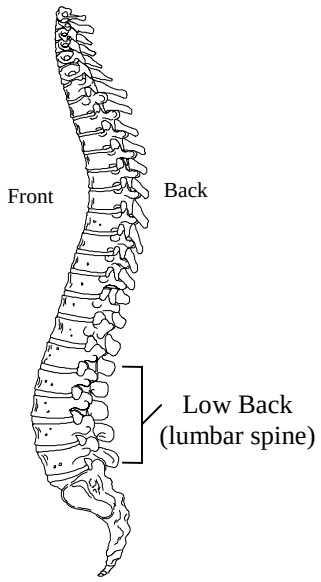
Direct Risk Factors:
Force
Awkward Posture
Static Posture
Repetition

A Trimmer Puller may bend forward or to the side in order to pull, push, lift, or turn lumber pieces. A Trimmer Puller may have to continuously hold a bent posture when working surfaces are too low.

BACKGROUND INFORMATION

- The spine is made up of 33 bones called vertebrae. Each of these vertebrae is specially designed to protect the spinal cord and provide support for the back. Between each of the vertebrae are discs. Discs have tough elastic walls that are filled with a watery gel-like substance. These discs are like jelly donuts; when they are pressed down on one side, the other side bulges and puts increased pressure on the wall of the disc. To maintain an even distribution of pressure across the discs, the spine has to be kept in the neutral posture.

Neutral Spine



DIRECT RISK FACTORS

Force

- Lifting increases the loading on the spine. Weight held in the hands is transmitted to the low back. The greater the weight, the greater the loading on the structures of the low back.

Awkward Posture

- Back muscles must support the weight of the upper body when leaning forward or to the side. Increased bending of the back increases the loading on the spine and increases the pressure on the walls of the discs.

Static Posture

- Holding the upper body forward or to the side, increases loading on the tissues required to support the load. If the duration is excessive, and the recovery is not adequate (e.g., spine not returned to neutral posture), the tissues may deform to the point of injury.

Repetition

- Repeated forward or side bending and/or lifting can gradually fatigue the structures of the low back. If the repetitive stress is excessive, and recovery is not adequate, the disc walls may fatigue to the point of injury.

INDIRECT RISK FACTORS

Workstation Design

Working Reaches

- Loading on the low back tissues is increased when workers have to reach to turn lumber on a deck. Interference from foot pedals or table design may prevent workers from getting closer to lumber.

Working Heights

- Loading on the low back tissues is increased when workers have to bend forward or to the side to reach lumber on a deck. The lower the deck height the more the worker has to bend to reach.

Characteristics of Objects Being Handled

Size and shape

- Loading on the low back tissues is increased when Trimmer Pullers have to lift heavier pieces of lumber (e.g., cants, 2”x10”, green lumber). The heavier the load, the greater the amount of stress on the low back.

CONSEQUENCES

- Repeatedly bending forward or to the side may lead to damage in the disc walls, while holding these postures will result in increases in muscle fatigue.
- Signs and symptoms may include muscle spasm and sharp or radiating pain in the back and/or lower extremities.

SUGGESTED SOLUTIONS

- For specific solutions that may prevent injuries to the Back, please see the column labelled “Back” in the Summary of Solutions on pages 75 & 76.
- For exercises that can help to prevent ***back*** injuries, see the ***Back section of the Body Manual.***

ANKLE

Direct Risk Factors:
Awkward Posture
Repetition

A Trimmer Puller frequently activates foot pedals in order to operate chains and various deck controls.

BACKGROUND INFORMATION

- The muscle responsible for pulling the foot upwards is found in the front of the shin. Its tendon runs beneath thick bands at the ankle before attaching to the foot bones.

DIRECT RISK FACTORS

Awkward Posture

- Lifting the foot to activate a foot pedal puts the ankle into an awkward posture, which increases the loading in the muscle on the front of the shin. The further away from the neutral posture the ankle is, the greater the loading to this muscle. If the shoes worn are rigid or heavy, the loading is also increased.

Repetition

- Repetitive use of foot pedals may gradually cause small tears in the muscle on the front of the shin. If the repetitive stress is excessive, and recovery is not adequate, the small tears in the muscle on the front of the shin may progress to a more significant problem.

INDIRECT RISK FACTORS

Workstation Design

Working Heights

- Loading on the tissues of the ankle is increased when foot pedals are placed above floor level. This increased height leads to larger ankle angles for activation, in turn leading to increased loading on shin muscles.

CONSEQUENCES

- Repeated use of foot pedals can cause damage to the tissues in the shin.
- Signs and symptoms include inflammation, and pain with walking.

SUGGESTED SOLUTIONS

- For specific solutions that may prevent injuries to the Ankle, please see the column labelled “Ankle” in the Summary of Solutions on pages 75 & 76.

Summary of Body Parts at Risk

NECK

- A Trimmer Puller may look to the side in order to view lumber flow and watch for cross-ups.

SHOULDER

- A Trimmer Puller may pull, push, lift, and turn various sizes of lumber to trim for defects and/or length.

WRIST

- A Trimmer Puller may grip with the wrist bent to push, pull, lift, or turn lumber.

LOW BACK

- A Trimmer Puller may bend forward or to the side in order to pull, push, lift, or turn lumber pieces. A Trimmer Puller may have to continuously hold a bent posture when working surfaces are too low.

ANKLE

- A Trimmer Puller frequently activates foot pedals in order to operate chains and various deck controls.

Risk Factors by Body Part

Direct Risk Factors	Neck	Neck/ Shoulder	Shoulder	Elbow/ Wrist	Wrist	Wrist/ Hand	Low Back	Hip	Knee	Ankle	Foot
Force			✓		✓		✓				
Repetition	✓		✓		✓		✓			✓	
Awkward Posture	✓		✓		✓		✓			✓	
Static Posture							✓				
Contact Stress											
Vibration – Whole body*											
Vibration - Hand Transmitted*											

Indirect Risk Factors		Neck	Neck/ Shoulder	Shoulder	Elbow/ Wrist	Wrist	Wrist/ Hand	Low Back	Hip	Knee	Ankle	Foot
Duration*	Duration	✓		✓		✓		✓			✓	
Workstation Design	Working Reaches			✓				✓				
	Working Heights			✓				✓			✓	
	Seating											
	Floor Surfaces											
Characteristics of Objects Being Handled	Size and Shape					✓		✓				
	Load Condition and Weight Distribution											
	Container, Tool and Equipment Handles											
Environmental Conditions	Heat Exposure	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
	Cold Exposure	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
	Lighting	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
	Noise	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
	Vibration**	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
Work Organisation	Work-Recovery Cycles	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
	Task Variability	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
	Work Rate	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦

** Extended exposure to <u>any</u> risk factor can increase the likelihood of injury. For solutions designed to decrease the duration of exposure to any risk factor please refer to the Work Organisation section of the General Risk Factor Solutions Manual*

*** Vibration is categorised under both direct and indirect risk factors. Vibration can directly increase the likelihood of injury to the back and wrist as well as indirectly (environmental conditions) promote injuries in other parts of the body.*

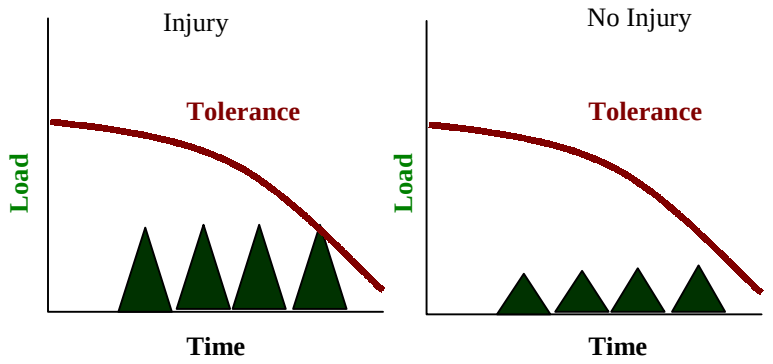
= Indicates that the risk factor was assessed and was not found to be a contributor to the body part problem.

♦ = Indicates that the risk factor assessed is commonly found in sawmills, and may need to be addressed at your mill. See the appropriate section of the General Risk Factor Solutions Manual for more information.

✓ = Indicates that the risk factor was assessed as a contributor to the body part problem. Please see the Summary of Solutions Table on pages 75 & 76 for specific problem/solution information. Additional information on some risk factors can be found in the General Risk Factor Solutions Manual.

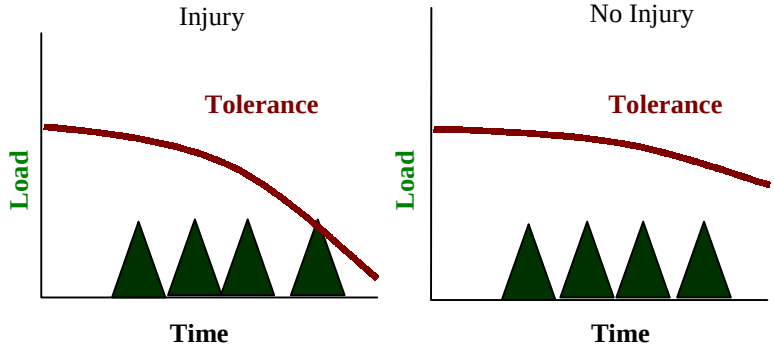
Injury Prevention

Injuries are prevented by …
Decreasing loads and increasing tissue tolerances



Injuries may be avoided by decreasing the size of the loads on the tissue.

Example – using a torque multiplier wrench to loosen bolts.



Injuries may be avoided by increasing tissue tolerances, and allowing the body to endure more loading.

Example – using maintenance exercises to strengthen tissues.

Suggested Solutions

The previous page explains how injuries may be prevented by decreasing the load on a tissue or by increasing the tissue tolerances. The Injury Prevention section of the Work Manual provides possible solutions that can be implemented to decrease the size of the loads on the tissues.

Each of the solutions described in the Work Manual has a risk control icon. The Risk Control Key provides guidelines on how to distinguish between different types of risk controls. Generally, engineering, administrative, and work practice controls are considered more effective than the use of personal protective equipment to decrease the risk of musculoskeletal injuries.

The focus of the Injury Prevention section is on solutions developed following the ergonomic investigation of the Trimmer Puller job. The solutions are presented under the headings of Workstation Design, Characteristics of Objects Being Handled, Environmental Conditions, and Work Organisation.

The Summary of Solutions table provides a quick reference guide to solutions for specific body part problems.

Please note that the information provided in the Body Manual addresses the issue of injury prevention in terms of increasing tissue tolerances through exercise. This information is not provided in the Work Manual.

Risk Control Key

Risk control measures (solutions) are commonly grouped into four categories:

E

ENGINEERING CONTROLS
These include physical changes to workstations, equipment, materials, production facilities, or any other relevant aspect of the work environment, that reduce or prevent exposure to risk factors.

A

ADMINISTRATIVE CONTROLS
These include any change in procedure that significantly limits daily exposure to risk factors, by control or manipulation of the work schedule or manner in which work is performed. Administrative controls include, but are not limited to, job rotation, rest breaks, alternative tasks, job enlargement, redesign of work methods, and adjustment of work pace or output. Some models of risk control include work practice controls within this category.

WP

WORK PRACTICE CONTROLS
These include techniques used to perform the tasks of a job, such as reaching, gripping, using tools and equipment, or discarding objects, etc. Education and training are an integral part of work practice controls.

PPE

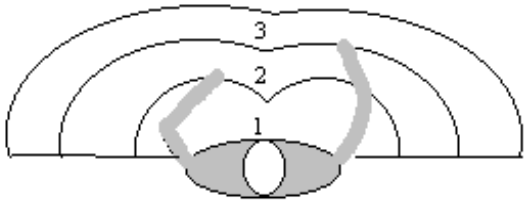
PERSONAL PROTECTIVE EQUIPMENT
These are devices worn by a worker to reduce the risk of injury, including gloves, kneepads, hearing protection, and leather aprons.

On the following pages, the icons next to the solution options indicate the type of risk control.

Workstation Design

WORKING REACHES

A working reach that is too far for the worker will require stressful shoulder, elbow, wrist, and back postures. Reaching to the side, behind, or too far in front of the body can put stress on the smaller muscles. Ideally, working reaches should be within a normal reach envelope, as laid out below, with the controls and materials that are handled most often closest to the body. It is also ideal to have controls that perform similar or combined functions grouped together to decrease awkward postures that may otherwise occur.



1 = Controls/items most frequently used
2 = Controls/items less frequently used
3 = Controls/items least frequently used

Generally, the most frequently used items should be placed within a forearm's reach, with less frequently used items placed within a comfortable arm's reach, and infrequently used items placed within a fully extended arm's reach. For more specific recommendations on working reaches, please consult anthropometric tables or an ergonomist.

Remove or recess objects

E

A Trimmer Puller is required to reach forward or to the side when turning lumber. Any obstructions placed in front of the Trimmer Puller may require increased reach, leading to awkward posture. Obstructions such as foot pedals that are in front of the transfer deck will require the Trimmer Puller to stand back to operate them. If possible, foot pedals should be put just underneath the deck so that the Trimmer is as close to the chain as possible when working. Access to foot pedals must not be obstructed, and any moving machinery (e.g., chains, gears) must be guarded.

Picaroon and pike pole use

WP

To reduce stress on the low back and shoulders, use picaroons or pike poles to reach lumber that is farther away from the body. Picaroons and/or pike poles should be stored close to the Trimmer Puller, and be well maintained. The more accessible and well maintained the tool, the more likely it will be used.

WORKING HEIGHTS

A working height that is too high for the worker will require stressful shoulder and arm postures, while a height that is too low will require stressful bending of the neck and trunk. The height of a work surface should allow room to change position and move the legs and feet (WCB Draft Ergonomic Regulations, 1994).

The ideal workstation is height adjustable, allowing a large percentage of the population to adjust the work surface height to suit their dimensions

To determine the appropriate work height specific for the, identify the body part of most concern. If the main concern is the:

Neck - minimise forward bending of the neck by increasing working height.
Shoulders - minimise elevation of the arms by lowering working height.
Low Back - minimise forward bending of the back by increasing working height.

For more specific guidelines on matching the working heights with the tasks performed please consult anthropometric tables or an ergonomist.

Transfer deck

E

To reduce loading on the shoulders and low back, modify the height of the transfer deck to approximately hip height. If the deck is too high, then the floor can be built up with matting. If the deck is too low, raise the height of the transfer deck or lower the floor. This change will allow the Trimmer Puller to use muscles of the upper and lower body together when handling lumber. If altering transfer deck height is not feasible at your mill, consider the job rotation recommendation on page 74.

Worker platform

E

If more than one worker uses the Trimmer Puller workstation, individual (portable) platforms may be built to allow each individual to work at a comfortable height. A more permanent solution would be a height adjustable platform for workers to stand on, also allowing each operator to work at his/her preferred height. In either case, the platform should be large enough to allow the Trimmer Puller to walk the length of the conveyor normally.

Stretch break for the back

WP

To reduce stress on the low back that results from sustained static posture, use a break in the flow of lumber as an opportunity to perform some stretches. Back extensions (leaning backward with the chin down) are a simple exercise that alleviates stress on the muscles of the low back. See the ***Back section of the Body Manual*** for more exercises.

Mirrors

E
WP

To reduce neck muscle fatigue due to repetitive rotation, angled mirrors can be placed in front of the Trimmer Puller to provide feedback regarding the flow of lumber and cross-ups. The mirror location should be positioned so that the operator can see it clearly with the neck in a neutral posture. Avoid placing the mirrors too high, as this requires neck extension. Trimmer Pullers should be encouraged to use mirrors instead of repeatedly turning their neck.

Look farther down transfer deck

WP

To reduce neck muscle fatigue due to repetitive rotation, Trimmer Pullers should be encouraged to expand their field of view and look farther down the transfer deck. This larger field of view allows the operator to observe several pieces of lumber at once, decreasing the number of repetitive neck motions.

Small multiple rollers

E

To reduce the amount of loading on the shoulder when pushing or pulling, rollers can be installed to assist the worker. Several smaller rollers are recommended, as they allow single pieces of lumber to be pulled or pushed. Larger rollers usually move several pieces of lumber at once, creating more work for operators who have to push back those pieces.

Maintenance of rollers

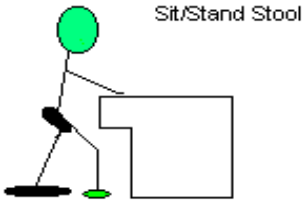
WP

To minimise force on the shoulder, wrist, and low back when pulling lumber off rollers, the rollers should be well maintained and free of debris that may restrict movement.

Sit/stand stool

E
WP

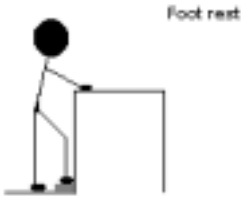
In order to minimise fatigue in the lower extremities, sit/stand stools can be provided. Sit/stand stools are preferred over regular stools, as the design makes it easier to alternate between sitting and standing, and allows the larger muscles of the lower extremities to be recruited when handling objects.



Footrests and foot rails

E

To reduce muscle fatigue in the low back, footrests or foot rails can be built into the workstation. Encourage the use of footrests or rails when the Trimmer Puller has a break during the lumber flow. This is also a good work practice while working, encouraging postural changes (left foot up, right foot up) and reducing the load associated with static standing.



FLOOR SURFACES

Anti-fatigue matting

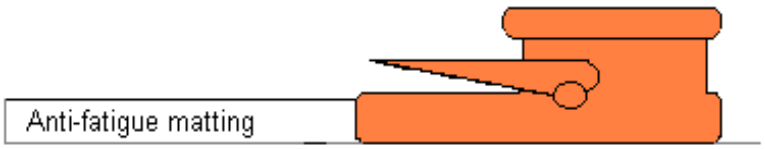
E

In order to minimise fatigue in the lower extremities, anti-fatigue matting can be installed. The use of anti-fatigue matting in the work area will help to increase comfort and reduce muscle fatigue. The cushioned surface encourages continuous micro-movements of the feet, which minimises blood pooling in the feet and legs and the associated discomfort. Addition of anti-fatigue matting may also aid in damping vibration levels.

Recessed foot pedals

E

In order to minimise awkward postures of the ankle, recess foot pedals into anti-fatigue matting to decrease the height of the foot pedal base. To recess foot pedals, and provide a more comfortable standing surface in the process, position anti-fatigue matting as close as possible to the foot pedal base. If the pedals are stationary, cut the matting to surround the front of the foot pedal. For moveable foot pedals, place the matting as close to the base of the foot pedal as possible. The height of the matting should not exceed the base of the foot pedal (see diagram below). It is important to ensure pedals are kept clean of debris and are well maintained.



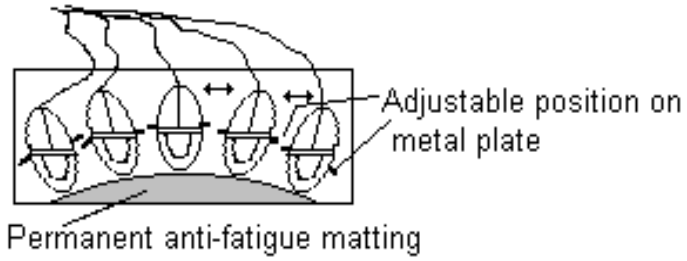
Moveable foot pedals

E
WP

In order to reduce awkward postures of the lower extremities, allow operators to choose the most appropriate position for the pedals, based on their body dimensions and the workstation design.

Securing the foot pedals may be required or desirable. Three solutions include:

1) Providing moveable foot pedals on a metal plate. The foot pedals are positioned in slide tracks cut into the metal, which allow pedals to move into the desired positions. The pedals are then fastened into place. The operator is able to move the set of foot pedals to any desired position in the workstation.



2) Providing several positions on the floor where clips or nails may be used to secure foot pedals. If this option is considered, make sure each possible position is highly visible to all operators, to prevent tripping or injuries.

3) Providing a physical link (e.g., a metal bar) between two foot pedals with the same function. This solution is most appropriate where a worker may move to manipulate lumber but still needs to operate the foot pedals.

Characteristics of Objects Being Handled

CONTAINER, TOOL AND EQUIPMENT HANDLES

Modify tool handles

E

If hand tools such as picaroons and pike pools are frequently used, increase friction of the tool handle. This change can reduce the amount of grip force required. Due to the smooth, slippery surface of metal or wooden tool handles, a Trimmer Puller may use a higher grip force to maintain control of the tool, which can put the elbow, and possibly the wrist and hand, at risk of injury. Wrapping the tool handles with foam, rubber, medical/athletic tape, or modifying the surface using other friction increasing material (e.g., gritty paint if plastic substances are not allowed) would increase the friction between the handle and the Trimmer Puller's glove.

Properly fitted gloves

PPE

In order to reduce grip forces required by the Trimmer Puller, the operator should wear properly fitted gloves. Gloves that are too small restrict finger movement causing the hands to work against the glove. Gloves that are too large may cause overgripping.

Environmental Conditions

Please refer to the General Risk Factor Solutions Manual for solutions regarding environmental condition risk factors.

Work Organisation

Alternate sides of work area

A WP To reduce the development of muscle imbalance, encourage Trimmer Pullers to switch sides of the transfer deck when pulling lumber. Rotating between the Trimmer Pullers can also accomplish this.

Please refer to the General Risk Factor Solutions Manual for solutions regarding work organisation risk factors.

Summary of Solutions

Refer to the table below to help determine which solution alternatives will aid in addressing risk factors in the particular body parts of concern.

		Injury Prevention Potential										
SOLUTIONS	**Page**	Neck	Neck/ Shoulder	Shoulder	Elbow/Wrist	Wrist	Wrist/ Hand	Low Back	Hip	Knee	Ankle	Foot
Remove or recess objects	**67**	**A**		**A**		**F**		**F A S**				
Picaroon and pike pole use	**67**			**F A**				**F A**				
Transfer deck	**68**	**A**		**A**				**F A S**				
Worker platform	**68**			**A**				**A**				
Stretch break for the back	**69**							**A S**				
Mirrors	**69**	**A R**										
Look farther down transfer deck	**69**	**A R**										
Small multiple rollers	**70**			**F**		**F**		**F**				
Maintenance of rollers	**70**			**F**		**F**		**F**				
Sit/stand stool	**70**							**S**		**S**	**S**	**S**
Footrests and foot rails	**70**							**S**				
Anti-fatigue matting	**71**							**S**			**S**	

Direct Risk Factors

F = *Force* **R** = *Repetition* **A** = *Awkward Posture*
S = *Static Posture* **C** = *Contact Stress* **V =** *Vibration*

Summary of Solutions

Refer to the table below to help determine which solution alternatives will aid in addressing risk factors in the particular body parts of concern.

		Injury Prevention Potential									
SOLUTIONS	**Page**	Neck	Neck/ Shoulder	Shoulder	Wrist	Wrist/Hand	Low Back	Hip	Knee	Ankle	Foot
Recessed foot pedals	**71**									**A**	
Moveable foot pedals	**72**						**A**				
Modify tool handles	**73**			**A**	**A**						
Properly fitted gloves	**73**				**F**						
Alternate sides of work area	**74**	**A**		**F A R**	**F A R**		**F A R**			**A R**	
Heat Exposure	◆	indirectly reduces risk of injury to the body									
Cold Exposure	◆	indirectly reduces risk of injury to the body									
Lighting	◆	indirectly reduces risk of injury to the body									
Noise	◆	indirectly reduces risk of injury to the body									
Vibration	◆	directly reduces risk of injury to the back and wrist									
Rest breaks	◆	indirectly reduces risk of injury to the body									
Job Rotation	◆	indirectly reduces risk of injury to the body									
Task Rotation	◆	indirectly reduces risk of injury to the body									
Work Pace	◆	indirectly reduces risk of injury to the body									
Scheduling	◆	indirectly reduces risk of injury to the body									

Direct Risk Factors

F = *Force* **R** = *Repetition* **A** = *Awkward Posture*
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◆ = *See General Risk Factor Solutions Manual*

TRIMMER PULLER MSI SAFETY GUIDE

OBJECTIVE:

To identify ergonomic risks involved in the Trimmer Puller tasks, and to reduce the potential for musculoskeletal injuries.
More detailed information about risk reducing recommendations can be found in the Work Manual for the Trimmer Puller.

CHECK IF THIS APPLIES	ACTIVITY OF RISK	DIRECT RISK FACTOR(S)	POTENTIAL HAZARDS	SUGGESTED SOLUTIONS
	Neck A Trimmer Puller may look to the side in order to view lumber flow and watch for cross-ups.	**Awkward Posture** **Repetition**	• Neck muscles are required to turn the head to the side. The further the head is turned to the side, the greater the load on the muscles and tendons. • Neck muscles must support the weight of the head while in a side bent position. The more the neck bends, the greater the load on the muscles and tendons. • When the head is repeatedly turned to the side, the muscles of the neck are subjected to repeated stress with little time for recovery. If the repetitive stress is excessive, and recovery is not adequate, the tissues can fatigue to the point of injury.	• Use mirrors instead of repetitive neck rotation. • Keep mirrors clean to allow for maximum visibility. • Look farther down the transfer deck when looking for lumber size and defects. This work practice will increase the field of view, allowing the operator to observe several pieces of lumber at one time, and reducing repetitive neck movements. • If constantly looking to one side, muscles of the neck should be stretched in the other direction to minimise muscle imbalance. • For exercises that can help prevent ***Neck*** injuries, ***see the Neck section of the Body Manual***.

CHECK IF THIS APPLIES	ACTIVITY OF RISK	DIRECT RISK FACTOR(S)	POTENTIAL HAZARDS	SUGGESTED SOLUTIONS
	Shoulder A Trimmer Puller may pull, push, lift, and turn lumber in order to trim for defects and/or length.	**Force**	• The rotator cuff stabilises the shoulder joint when objects are pushed, pulled, lifted or manipulated. The heavier the object, or the larger the force required, the greater the load on the rotator cuff. • If the force placed on the rotator cuff exceeds the tissue tolerances, injury may occur.	• To reduce stress on the shoulder, use a picaroon or pike pole to reach lumber that is farther away from the body. Picaroons and/or pike poles should be located close by, easily accessible and well maintained. The more accessible the tool, the more likely it will be used. • To minimise force on the shoulder when pulling lumber off rollers, rollers should be well maintained and free of debris that may restrict movement. • For exercises that can help prevent ***Shoulder*** injuries, ***see the Shoulder section of the Body Manual***.
		Awkward Posture	• The rotator cuff stabilises the shoulder joint when the arms are away from the body. The farther away the arms are from the body, the greater the load on the rotator cuff.	
		Repetition	• When the arms are repeatedly raised, the rotator cuff is subjected to repeated stress with little time for recovery. If the repetitive stress is excessive, and recovery is not adequate, the tissues may fatigue to the point of injury.	

CHECK IF THIS APPLIES	ACTIVITY OF RISK	DIRECT RISK FACTOR(S)	POTENTIAL HAZARDS	SUGGESTED SOLUTIONS
	Wrist A Trimmer Puller may grip with the wrist bent to push, pull, lift, or turn lumber.	**Force**	• Gripping an object requires activation of the forearm muscles, which generates tension in the tendons and tendon sheaths running through the wrist. The harder an object is gripped, the greater the tension in the tendons. As tension increases, the pressure within the carpal tunnel may also increase.	• Keep rollers well-maintained and free of debris that may restrict movement. This will minimise the amount of force required to pull lumber. • Wear properly fitted gloves to minimise overgripping. • Keep picaroons and pike poles well maintained to minimise force when gripping. • For exercises that can help prevent ***Wrist*** injuries, ***see the Wrist section of the Body Manual***.
		Awkward Posture	• As the wrist is bent, the tendon sheaths will rub up against the walls of the carpal tunnel. The further the wrist is bent, the more friction experienced in the tendon sheaths.	
		Repetition	• Repeated gripping and/or repeated bending of the wrist causes stress to the tendon sheaths. If the repetitive stress is excessive, and recovery is not adequate, the tendon sheaths may fatigue to the point of injury.	

CHECK IF THIS APPLIES	ACTIVITY OF RISK	DIRECT RISK FACTOR(S)	POTENTIAL HAZARDS	SUGGESTED SOLUTIONS
	Low Back A Trimmer Puller may bend forward or to the side in order to pull, push, lift or turn lumber pieces. A Trimmer Puller may have to hold a bent posture when working surfaces are too low.	**Force** **Awkward Posture** **Static Posture** **Repetition**	• Lifting increases the loading on the spine. Weight held in the hands is transmitted to the low back. The greater the weight, the greater the loading on the structures of the low back. • Back muscles must support the weight of the upper body when leaning forward or to the side. Increased bending of the back increases the loading on the spine and increases the pressure on the walls of the discs. • Holding the upper body forward or to the side, increases loading on the tissues required to support the load. If the duration is excessive, and the recovery is not adequate (e.g., spine not returned to neutral posture), the tissues may deform to the point of injury. • Repeated forward or side bending and/or lifting can gradually fatigue the structures of the low back. If the repetitive stress is excessive, and recovery is not adequate, the disc walls may fatigue to the point of injury.	• Use a picaroon or pike pole to reach lumber that is farther away from the body. Picaroons and/or pike poles should be easily accessible and well maintained. The more accessible the tool, the more likely it will be used. • Perform stretches when there is a break in the flow of lumber. Back extensions (leaning backward with the chin down) are a simple exercise that can be performed to alleviate stress on the muscles of the low back. This exercise can be performed continuously for 10 to 30 seconds, throughout the day. • Keep rollers well-maintained and free of debris that may restrict movement. • For exercises that can help prevent ***low back*** injuries, ***see the Back section of the Body Manual***.

CHECK IF THIS APPLIES	ACTIVITY OF RISK	DIRECT RISK FACTOR(S)	POTENTIAL HAZARDS	SUGGESTED SOLUTIONS
	Ankle A Trimmer Puller frequently activates foot pedals in order to operate chains and various deck controls.	**Awkward Posture** **Repetition**	• Lifting the foot to activate a foot pedal puts the ankle into an awkward posture, which increases the loading in the muscle on the front of the shin. The further away from the neutral posture the ankle is, the greater the loading to this muscle. If the shoes worn are rigid or heavy, the loading is also increased. • Repetitive use of foot pedals may gradually cause small tears in the muscle on the front of the shin. If the repetitive stress is excessive, and recovery is not adequate, the small tears in the muscle on the front of the shin may progress to a more significant problem.	• Wear safety shoes that do not restrict ankle movement. • For exercises that can help prevent ***Foot*** injuries, ***see the Foot section of the Body Manual***.