APPENDIX - I

WORKSHEET FOR DETERMINE SOCIO-ECONOMIC STATUS

(Modified Kuppuswami's Scale)

Name: Age: Sex: M /F

A	Education	Score
1	Profession or honours	7
2	Graduate or post graduate	6
3	Intermediate or post high school diploma	5
4	High school certificate	4
5	Middle school certificate	3
6	Primary school certificate	2
7	Illiterate	1
B	**Occupation**	**Score**
1	Profession	10
2	Semi-Profession	6
3	Clerical, Shop-owner, Farmer	5
4	Skilled worker	4
5	Semi-skilled worker	3
6	Unskilled worker	2
7	Unemployed	1

C	Monthly family income in Rs	Score	Modified for 1998 in Rs	Modified for 2012 in Rs
1	≥ 2000	12	≥ 13500	≥32050
2	1000-1999	10	6750 - 13499	16020 – 32049
3	750-999	6	5050 - 6749	12020 – 16019
4	500-749	4	3375 - 5049	8010 – 12019
5	300-499	3	2025 - 3374	4810 – 8009
6	101-299	2	676 - 2024	1601 – 4809
7	≤ 100	1	≤ 675	≤ 1600

Total Score	Socioeconomic class
26-29	Upper (I)
16-25	Upper Middle (II)
11-15	Lower middle (III)
5-10	Upper lower (IV)
<5	Lower(V)

APPENDIX - II

MUSCULOSCELETAL DISORDER SURVEY

(THE MODIFIED NORDIC MUSCULOSCELETAL QUESTIONNAIRE)
Please complete the questionnaire by answer in all questions as fully as possible. Some the questions requites a written answer for others need only Tick.

Personal details: Date:
1.Name-------------------------------- 2. Sex--------------------
2. Date of birth-----------------------4. Weight---------------- **5. Height................**
6. Are you right or left handed- (a) Right------- (b) Left-------(c) able to use both hand-----

Have you at any time during the last 12 months hand trouble (such as ache, pain, discomfort, numbness) in: (A)	Have you trouble during the last 7 days: (B)	During the last 12 months have you been prevented from carrying out normal activities (e.g. Job, house work, hobbies) because of this trouble: (C)
1. Neck: Yes------No-------	1. Neck: Yes--- No---	1. Neck: Yes--- No---
2. Shoulder: Yes------No--- In right shoulder------------ In left shoulder-------------- In both shoulders-----------	2.Shoulder:Yes-- No- In right shoulder---- In left shoulder------ In both shoulders----	3. Shoulders (both/either) Yes--- No---
3. Elbow: Yes---- No---- In right Elbow ----------- In left Elbow ------------ In both Elbow -----------	3. Elbow: Yes--No- In right Elbow ----- In left Elbow------ In both Elbow-----	3. Elbows (both/either) Yes--- No---
4. Wrist/Hands Yes---- No--- In right Wrist/Hands -------- In left Wrist/Hands ---------- In both Wrist/Hands ---------	4.Wrist/Hands: Yes-No- In right Wrist/Hands - In left Wrist/Hands--- In both Wrist/Hands --	4. Wrists/Hands (both/either) Yes--- No---
5. Upper Back: Yes---No---	5.Upper Back: Yes-No--	5. Upper back: Yes--- No---
6. Lower Back (small of the back): Yes---- No----	6. Lower Back(small of the back):Yes-No--	6. Lower Back: Yes--- No---

7. One or both hips/thighs/ buttocks: Yes---- No---	7.One/both hips/Thigh /buttocks: Yes-- No-	7. One or both hips/buttocks: Yes--- No---
8. One or both knees: Yes---- No-----	8. One or both knees: Yes---- No-----	8. One or both knee Yes--- No---
9. One or both ankle/feet: Yes---- No------	9.One/both ankle/feet: Yes--- No----	9. One or both ankle/feet: Yes--- No---

<u>Neck trouble</u>:

How to answer the questionnaire:

1. Have you ever had any trouble (ache, pain, numbness or discomfort)? Yes---No----
2. Have you ever hurt your neck in an accident? Yes---No----

If the answer is no, please go to question 3. If yes:

2a. Was the accident at work? Yes--- No----

2b. What was the approximate date of accident? Month--- Year----

3. Have you ever had change duties or jobs because of neck trouble? Yes---No----
4. What do you think brought on this problem with your neck? Accident------ Sport activity----- Activity at home------- Activity at work------- Other--------- (PLEASE SPECIFY)

5a. What year did you first have neck trouble?-------------

5b. What year was your worst neck trouble?----------------

6. How bad was the pain during the worst episodic? Mild---- Severe---- Very severe----
7. Have you ever been absent from work because of neck trouble? Yes---No----

If yes answer is No, please go to Question 8. If yes, go to Question7.

7a. How many times? -------------

7b. How many day have been absent from work with neck trouble in total? ---------

7c. How many day you have been absent from work with neck trouble in the last 12 month? --------------

8. How often do you get or you had neck trouble? Daily---- One/more times in a week--- One/more times in a month------ One/more times in a year----------- One/more times in every few years-------------------One episode of trouble only-----------------
9. What is the total length of time that you have had neck trouble during the last 12 month?0days--1-7days--8-30days---morethan30days,butnoteverydays—Every days-------
10. Has neck trouble caused you to reduce your activity during the last 12month?

10a. Work activity (at home or away from home). Yes---No----

10b. Leisure activity Yes--- No----

11. What is the total length of time that neck trouble have been prevented you from doing your normal trouble during the last 12 months? 0 days--- 1-7 days---- 8-30day -- more than 30 days.

12. Have you been seen by doctor, physiotherapist, chiropractor, or other such person because neck trouble during the last 12 months? 1-7 days---- 8-30 days----- more than 30days.

If the answer is No, please go to the section, if Yes, please go to the next question. 12a. Where? (More than one can be Ticked). Medical centre at work----- GP------ Hospital------ Private doctor----- Osteopath or chiropractor-----Other-------

If you have ticked other, please give details--

<u>Shoulder trouble</u>:

1. Have you ever had any trouble (ache, pain, numbness or discomfort)? Yes--- No----

Have you ever hurt your neck in an accident? Yes--- No----

My right shoulder------- My left shoulder-------- Both shoulder---------------- If the answer is now, please go the question 3. If yes----

2a. Was the accident at work? Yes--- No----

2b. What was the approximate date of accident? Month--- Year----

3. Have you ever had change duties or jobs because of shoulder trouble? Yes---No----

4. What do you think brought on this problem with your shoulder ?Accident------

   Sport activity---- Activity at home------- Activity at work-------

   Other---------

(PLEASE SPECIFY)

5a. What year did you first have shoulder trouble? -------------

5b. What year was your worst shoulder trouble? ----------------

6. How bad was the pain during the worst episodic? Mild---- Severe---- Very severe----

7. Have you ever been absent from work because of shoulder trouble? Yes--- No----

If yes answer is No, please go to Question 8. If Yes, go to Question7.

7a. How many times?------------

7b. How many day have been absent from work with shoulder trouble in total?---------

7c. How many day you have been absent from work with shoulder trouble in the last 12 month?-----------------

8. how often do you get or you had shoulder trouble? Daily----- One/more times in a

week---- One/more times in a month------ One/more times in a year-----------

One/more times in every few years--------------------One episode of trouble only-----------

9. What is the total length of time that you have had shoulder trouble during the last 12 month? 0 days------ 1-7 days---- 8-30 days----- more than 30 days, but not every days----- Every days--------

10. Has shoulder trouble caused you to reduce your activity during the last 12month?

10a. Work activity (at home or away from home). Yes---No----

10b. Leisure activity Yes--- No----

11. What is the total length of time that shoulder trouble has been prevented you from doing your normal trouble during the last 12 months? 0 days---; 1-7 days----; 8-30 days--------; more than 30days.

12. Have you been seen by doctor, physiotherapist, chiropractor, or other such person because shoulder trouble during the last 12 months? 1-7 days---- 8-30 days----- more than 30days.

If the answer is No, please go to the section, if Yes, please go to the next question. 12a. Where? (More than one can be Ticked). Medical centre at work----- GP------ Hospital------ Private doctor----- Osteopath or chiropractor-----Other-------

If you have ticked other, please give details---

<u>Lower Back trouble</u>:

1. Have you ever had any trouble (ache, pain, numbness or discomfort)? Yes--- No----; If you have answered No to this question, do next answer question 2-12 but please go to the section on the shoulder trouble.

Have you ever hurt your lower back in an accident? Yes--- No---- 2a.

Was the accident at work? Yes--- No----

2b. What was the approximate date of accident? Month--- Year----

3. Have you ever had change duties or jobs because of lower back? Yes---No----

4. What do you think brought on this problem with your lower back? Accident------

Sport activity----- Activity at home------- Activity at work------- Other--------- (PLEASESPECIFY)

5a. What year did you first have lower back trouble? -------------

5b. What year was your worst lower back trouble? ----------------

6. How bad was the pain during the worst episodic? Mild---- Severe---- Very severe----

7. Have you ever been absent from work because of lower back trouble? Yes--- No----

If yes answer is No, please go to Question 8. If Yes, go to Question7.

7a. How many times?-------------

7b. How many day have been absent from work with lower back trouble in total? ---------

7c. How many day you have been absent from work with lower back trouble in the last 12month? ------------------

8. how often do you get or you had lower back trouble? Daily----- One/more times in a week---- One/more times in a month------ One/more times in a year-----------

One/more times in every few years--------------------One episode of trouble only-----------

9. What is the total length of time that you have had lower back trouble during the last 12 month? 0 days------ 1-7 days---- 8-30 days----- more than 30 days, but not every days----- Every days--------

10. Has lower back trouble caused you to reduce your activity during the last 12month?

10a. Work activity (at home or away from home). Yes---No----

10b. Leisure activity Yes--- No----

11. What is the total length of time that lower back trouble has been prevented you from doing your normal trouble during the last 12 months? 0 days---; 1-7 days----; 8-30 days--------; more than 30days.

12. Have you been seen by doctor, physiotherapist, chiropractor, or other such person because lower back trouble during the last 12 months? 1-7 days-- 8-30 days-- more than 30days.

If the answer is No, please go to the section, if Yes, please go to the next question.

12a. Where? (More than one can be Ticked). Medical centre at work--- GP-----

Hospital------ Private doctor----- Osteopath or chiropractor----- Other-------

If you have ticked other, please give details---

Wrist or Hand trouble:

1. Have you ever had any trouble (ache, pain, numbness or discomfort)? Yes--- No----; If you have answered No to this question, do next answer question 2-12 but please go to the section on the shoulder trouble.

Have you ever hurt your lower back in an accident? Yes--- No----

My right left wrist or hand ------- My left wrist or hand-------- Both left wrist or hand ---- 2a. Was the accident at work? Yes--- No----

2b. What was the approximate date of accident? Month--- Year----

3. Have you ever had change duties or jobs because of left wrist or hand? Yes---No----

4. What do you think brought on this problem with your left wrist or hand? Accident------ Sport activity----- Activity at home------- Activity at work------- Other--------- (PLEASESPECIFY)

5a. What year did you first have left wrist or hand trouble?-------------

5b. What year was your worst left wrist or hand trouble?----------------

6. How bad was the pain during the worst episodic? Mild---- Severe---- Very severe----

7. Have you ever been absent from work because of left wrist/hand trouble? Yes--- No--

If yes answer is No, please go to Question 8. If Yes, go to Question7.

7a. How many times?------------

7b. How many day have been absent from work with left wrist or hand trouble in total?---

7c. How many day you have been absent from work with left wrist or hand trouble in the last 12 month?-----------------

8. How often do you get or you had left wrist or hand trouble? Daily----- One/more times in a week---- One/more times in a month------ One/more times in a year---------- One/more times in every few years------------------One episode of trouble only----------

9. What is the total length of time that you have had left wrist or hand trouble during the last 12 month? 0 days------ 1-7 days---- 8-30 days----- more than 30 days, but not every days-----Every days--------

10. Has left wrist/hand trouble caused to reduce your activity during the last 12 month?

10a. Work activity (at home or away from home). Yes---No----

10b. Leisure activity Yes--- No----

11. What is the total length of time that left wrist or hand trouble has been prevented you from doing your normal trouble during the last 12 months? 0 days--; 1-7 days---;8-30 days-------; more than 30 days.

12. Have you been seen by doctor, physiotherapist, chiropractor, or other such person becauseleftwristorhandtroubleduringthelast12months?1-7days;----------------------------------8-30 days-----; more than 30 days.

If the answer is No, please go to the section, if Yes, please go to the next question. 12a. Where? (More than one can be Ticked). Medical centre at work----- GP ------ Hospital------ Private doctor----- Osteopath or chiropractor-----Other-------

If you have ticked other, please give details--

APPENDIX - III

Body part discomfort (BPD) Rating

Name---------------------------- Age (years) ----------Sex:M/F Date:
Occupational status----------------------------- Duration (years) ----------------------------

	Body segment		0	1	2	3	4	5	6	7	8	9	10
1	Neck												
2	Shoulder	Right											
		Left											
3	Upper arms	Right											
		Left											
4	Lower arms	Right											
		Left											
5	Upper back												
6	Mid back												
7	Lower back												
8	Buttocks												
9	Thighs	Right											
		Left											
10	Legs	Right											
		Left											
11	Ankles	Right											
		Left											

Types of pain	**score**	**Types of pain**	**score**
No pain	0	Moderate pain	6
Discomfortness	1	Sever pain	7
Very mild pain	2	Very much severe pain	8
Mild pain	3	Very very much severe pain	9
Numbness	4	Intolerable	10
Average pain	5		

APPENDIX - IV

OWAS: Posture Analysis Work Sheet

Code	Body part and load used			
	Back	**Arms**	**Leg**	**Load or use of force**
1	Straight	Both armsare below shoulder level	Sitting	Weight or force needed is 10 kg or less
2	Bent forward, back forward.	One a rmisat or above the shoulder level.	Standing with both legs straight.	Weight or force needed exceeds 10 kg but is less than 20 kg.
3	Twisted or bend sideway.	Both arms are at or above the shoulder level.	Standing with the weight on one straight leg.	Weight or force needed exceeds 20 kg.
4	Bent/twisted /bend forward and sideway.	-	Standing or squatting with both knees bend.	-
5	-	-	Standing or squatting with one knee bend.	-
6	-	-	Kneeing on one or both knees.	-
7	-	-	Walking or moving.	-

BACK	ARMS	1			2			3			4			5			6			7			LEGS
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	USE OF FORCE
1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	1	1	1	1	1	1	
	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	1	1	1	1	1	1	
	3	1	1	1	1	1	1	1	1	1	2	2	3	2	2	3	1	1	1	1	1	2	
2	1	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	2	2	2	2	3	3	
	2	2	2	3	2	2	3	2	3	3	3	4	4	3	4	4	3	3	4	2	3	4	
	3	3	3	4	2	2	3	3	3	3	3	4	4	4	4	4	4	4	4	2	3	4	
3	1	1	1	1	1	1	1	1	1	2	3	3	3	4	4	4	1	1	1	1	1	1	
	2	2	2	3	1	1	1	1	1	2	4	4	4	4	4	4	3	3	3	1	1	1	
	3	2	2	3	1	1	1	2	3	3	4	4	4	4	4	4	4	4	4	1	1	1	
4	1	2	3	3	2	2	3	2	2	3	4	4	4	4	4	4	4	4	4	2	3	4	
	2	3	3	4	2	3	4	3	3	4	4	4	4	4	4	4	4	4	4	2	3	4	
	3	4	4	4	2	3	4	3	3	4	4	4	4	4	4	4	4	4	4	2	3	4	

ACTION CATEGORIES

1. No corrective measures
2. Corrective measures in the near future
3. Corrective measures as soon as possible
4. Corrective measures immediately

APPENDIX - V

RULA Employee Assessment Worksheet

Complete this worksheet following the step-by-step procedure below. Keep a copy in the employee's personnel folder for future reference.

A. Arm & Wrist Analysis

Step 1: Locate Upper Arm Position

-20° to +20° (+1); > -20° (+2); +20° to 45° (+2); 45° to 90° (+3); 90°+ (+4)

Step 1a: Adjust...

If shoulder is raised: +1;
If upper arm is abducted: +1;
If arm is supported or person is leaning: -1

Final Upper Arm Score =

Step 2: Locate Lower Arm Position

60° to 100° (+1); 0-60° (+2); 100°+ (+2)

Step 2a: Adjust...

If arm is working across midline of the body: +1;
If arm out to side of body: +1

Final Lower Arm Score =

Step 3: Locate Wrist Position

0° (+1); 0° to 15° (+2); 15°+ (+3)

Step 3a: Adjust...

If wrist is bent from the midline: +1

Final Wrist Score =

Step 4: Wrist Twist

If wrist is twisted mainly in mid-range =1;
If twist at or near end of twisting range = 2

Wrist Twist Score =

Step 5: Look-up Posture Score in Table A

Use values from steps 1,2,3 & 4 to locate Posture Score in table A

Posture Score A =

Step 6: Add Muscle Use Score

If posture mainly static (i.e. held for longer than 1 minute) or;
If action repeatedly occurs 4 times per minute or more: +1

Muscle Use Score =

+

Step 7: Add Force/load Score

If load less than 2 kg (intermittent): +0;
If 2 kg to 10 kg (intermittent): +1;
If 2 kg to 10 kg (static or repeated): +2;
If more than 10 kg load or repeated or shocks: +3

Force/load Score =

+

Step 8: Find Row in Table C

The completed score from the Arm/wrist analysis is used to find the row on Table C

Final Wrist & Arm Score =

=

SCORES

Table A

Upper Arm	Lower Arm	Wrist 1		Wrist 2		Wrist 3		Wrist 4	
		Wrist twist		Wrist twist		Wrist twist		Wrist twist	
		1	2	1	2	1	2	1	2
1	1	1	2	2	2	2	3	3	3
	2	2	2	2	2	3	3	3	3
	3	2	3	3	3	3	3	4	4
2	1	2	3	3	3	3	4	4	4
	2	3	3	3	3	3	4	4	4
	3	3	4	4	4	4	4	5	5
3	1	3	3	4	4	4	4	5	5
	2	3	4	4	4	4	4	5	5
	3	4	4	4	4	4	5	5	5
4	1	4	4	4	4	4	5	5	5
	2	4	4	4	4	4	5	5	5
	3	4	4	4	5	5	5	6	6
5	1	5	5	5	6	6	6	6	7
	2	5	6	6	6	6	7	7	7
	3	6	6	6	7	7	7	7	8
6	1	7	7	7	7	7	8	8	9
	2	8	8	8	8	8	9	9	9
	3	9	9	9	9	9	9	9	9

Table C

	1	2	3	4	5	6	7+
1	1	2	3	3	4	5	5
2	2	2	3	4	4	5	5
3	3	3	3	4	4	5	6
4	3	3	3	4	5	6	6
5	4	4	4	5	6	7	7
6	4	4	5	6	6	7	7
7	5	5	6	6	7	7	7
8+	5	5	6	7	7	7	7

Final Score=

B. Neck, Trunk & Leg Analysis

Step 9: Locate Neck Position

0° to 10° (+1); 10° to 20° (+2); 20°+ (+3); In extension (+4)

Step 9a

If neck is twisted: +1; If neck is side bending

Final Neck Score =

Step 10: Locate Trunk Position

Also if trunk is well supported while seated; 0°; 0° to 20°; 20° to 60°; 60°+

Step 10a

If trunk is twisted: +1; If trunk is side bending

Final Trunk Score =

Step 11

If legs & feet supported and balanced
If not: +2

Final Leg Score =

Table B

	Trunk Posture Score 1		2		3		4		5
	Legs		Legs		Legs		Legs		Legs
Neck	1	2	1	2	1	2	1	2	1
1	1	3	2	3	3	4	5	5	6
2	2	3	2	3	4	5	5	5	6
3	3	3	3	4	4	5	5	6	6
4	5	5	5	6	6	7	7	7	7
5	7	7	7	7	7	8	8	8	8
6	8	8	8	8	8	8	8	9	9

Step 12: Look-up Posture Score in Table B

Use values from steps 9,10 & 11 to locate Posture Score in Table B

Posture B Score =

+

Step 13: Add Muscle Use Score

If posture mainly static
If action 4/minute

Muscle Use Score =

+

Step 14: Add Force/load Score

If load less than 2 kg (intermittent):
If 2 kg to 10 kg (intermittent): +1;
If 2 kg to 10 kg (static or repeated):
If more than 10 kg load or repeated

Force/load Score =

=

Step 15: Find Column in Table C

The completed score from the Neck/Trunk & Leg analysis is used to find the column on Table C

Final Neck, Trunk & Leg Score =

Subject: ____________ Date: __/__/__

Company: ____________ Department: ____________ Scorer: ____________

FINAL SCORE: 1 or 2 = Acceptable; 3 or 4 investigate further; 5 or 6 investigate further and change soon; 7 investigate and change immediately

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APPENDIX – VI

REBA Employee Assessment Worksheet

based on Technical note: Rapid Entire Body Assessment (REBA), Hignett, McAtamney, Applied Ergonomics 31 (2000) 201-205

A. Neck, Trunk and Leg Analysis

Step 1: Locate Neck Position

+1 +2 +2

Neck Score

Step 1a: Adjust…
If neck is twisted: +1
If neck is side bending: +1

Step 2: Locate Trunk Position

+1 +2 +2 +3 +4

Trunk Score

Step 2a: Adjust…
If trunk is twisted: +1
If trunk is side bending: +1

Step 3: Legs

+1 +2 Add +1 Add +2

Adjust:

Leg Score

Step 4: Look-up Posture Score in Table A
Using values from steps 1-3 above, locate score in Table A

Posture Score A

+

Step 5: Add Force/Load Score
If load < 11 lbs : +0
If load 11 to 22 lbs : +1
If load > 22 lbs: +2
Adjust: If shock or rapid build up of force: add +1

Force/Load Score

=

Step 6: Score A, Find Row in Table C
Add values from steps 4 & 5 to obtain Score A.
Find Row in Table C.

Score A

Scoring:
1 = negligible risk
2 or 3 = low risk, change may be needed
4 to 7 = medium risk, further investigation, change soon
8 to 10 = high risk, investigate and implement change
11+ = very high risk, implement change

SCORES

Table A		Neck											
		1				2				3			
	Legs	1	2	3	4	1	2	3	4	1	2	3	4
Trunk Posture Score	1	1	2	3	4	1	2	3	4	3	3	5	6
	2	2	3	4	5	3	4	5	6	4	5	6	7
	3	2	4	5	6	4	5	6	7	5	6	7	8
	4	3	5	6	7	5	6	7	8	6	7	8	9
	5	4	6	7	8	6	7	8	9	7	8	9	9

Table B		Lower Arm					
		1			2		
	Wrist	1	2	3	1	2	3
Upper Arm Score	1	1	2	2	1	2	3
	2	1	2	3	2	3	4
	3	3	4	5	4	5	5
	4	4	5	5	5	6	7
	5	6	7	8	7	8	8
	6	7	8	8	8	9	9

Table C												
Score A (score from table A +load/force score)	Score B, (table B value +coupling score)											
	1	2	3	4	5	6	7	8	9	10	11	12
1	1	1	1	2	3	3	4	5	6	7	7	7
2	1	2	2	3	4	4	5	6	6	7	7	8
3	2	3	3	3	4	5	6	7	7	8	8	8
4	3	4	4	4	5	6	7	8	8	9	9	9
5	4	4	4	5	6	7	8	8	9	9	9	9
6	6	6	6	7	8	8	9	9	10	10	10	10
7	7	7	7	8	9	9	9	10	10	11	11	11
8	8	8	8	9	10	10	10	10	10	11	11	11
9	9	9	9	10	10	10	11	11	11	12	12	12
10	10	10	10	11	11	11	11	12	12	12	12	12
11	11	11	11	11	12	12	12	12	12	12	12	12
12	12	12	12	12	12	12	12	12	12	12	12	12

Table C Score + Activity Score

Final REBA Score

B. Arm and Wrist Analysis

Step 7: Locate Upper Arm Position:

+1 +2 +2 +3 +4

Step 7a: Adjust…
If shoulder is raised: +1
If upper arm is abducted: +1
If arm is supported or person is leaning: -1

Upper Arm Score

Step 8: Locate Lower Arm Position:

+1 +2

Lower Arm Score

Step 9: Locate Wrist Position:

+1 +2

Wrist Score

Step 9a: Adjust…
If wrist is bent from midline or twisted : Add +1

Step 10: Look-up Posture Score in Table B
Using values from steps 7-9 above, locate score in Table B

Posture Score B

+

Step 11: Add Coupling Score
Well fitting Handle and mid rang power grip, *good: +0*
Acceptable but not ideal hand hold or coupling acceptable with another body part, *fair: +1*
Hand hold not acceptable but possible, *poor: +2*
No handles, awkward, unsafe with any body part, *Unacceptable: +3*

Coupling Score

=

Step 12: Score B, Find Column in Table C
Add values from steps 10 &11 to obtain Score B. Find column in Table C and match with Score A in row from step 6 to obtain Table C Score.

Score B

Step 13: Activity Score
+1 1 or more body parts are held for longer than 1 minute (static)
+1 Repeated small range actions (more than 4x per minute)
+1 Action causes rapid large range changes in postures or unstable base

Task name: ______________________ Reviewer: ____________________ Date: ____/____/____

provided by Practical Ergonomics

This tool is provided without warranty. The author has provided this tool as a simple means for applying the concepts provided in REBA.

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APPENDIX-VII

Worker's name ______________________________ Date ______________

Observer's Assessment

Back

A When performing the task, is the back
(select worse case situation)

- A1 Almost neutral?
- A2 Moderately flexed or twisted or side bent?
- A3 Excessively flexed or twisted or side bent?

B Select ONLY ONE of the two following task options:

EITHER

For seated or standing stationary tasks. Does the back remain in a static position most of the time?

- B1 No
- B2 Yes

OR

For lifting, pushing/pulling and carrying tasks (i.e. moving a load). Is the movement of the back

- B3 Infrequent (around 3 times per minute or less)?
- B4 Frequent (around 8 times per minute)?
- B5 Very frequent (around 12 times per minute or more)?

Shoulder/Arm

C When the task is performed, are the hands
(select worse case situation)

- C1 At or below waist height?
- C2 At about chest height?
- C3 At or above shoulder height?

D Is the shoulder/arm movement

- D1 Infrequent (some intermittent movement)?
- D2 Frequent (regular movement with some pauses)?
- D3 Very frequent (almost continuous movement)?

Wrist/Hand

E Is the task performed with
(select worse case situation)

- E1 An almost straight wrist?
- E2 A deviated or bent wrist?

F Are similar motion patterns repeated

- F1 10 times per minute or less?
- F2 11 to 20 times per minute?
- F3 More than 20 times per minute?

Neck

G When performing the task, is the head/neck bent or twisted?

- G1 No
- G2 Yes, occasionally
- G3 Yes, continuously

Worker's Assessment

Workers

H Is the maximum weight handled MANUALLY BY YOU in this task?

- H1 Light (5 kg or less)
- H2 Moderate (6 to 10 kg)
- H3 Heavy (11 to 20kg)
- H4 Very heavy (more than 20 kg)

J On average, how much time do you spend per day on this task?

- J1 Less than 2 hours
- J2 2 to 4 hours
- J3 More than 4 hours

K When performing this task, is the maximum force level exerted by one hand?

- K1 Low (e.g. less than 1 kg)
- K2 Medium (e.g. 1 to 4 kg)
- K3 High (e.g. more than 4 kg)

L Is the visual demand of this task

- L1 Low (almost no need to view fine details)?
- *L2 High (need to view some fine details)?

* *If High, please give details in the box below*

M At work do you drive a vehicle for

- M1 Less than one hour per day or Never?
- M2 Between 1 and 4 hours per day?
- M3 More than 4 hours per day?

N At work do you use vibrating tools for

- N1 Less than one hour per day or Never?
- N2 Between 1 and 4 hours per day?
- N3 More than 4 hours per day?

P Do you have difficulty keeping up with this work?

- P1 Never
- P2 Sometimes
- *P3 Often

* *If Often, please give details in the box below*

Q In general, how do you find this job

- Q1 Not at all stressful?
- Q2 Mildly stressful?
- *Q3 Moderately stressful?
- *Q4 Very stressful?

* *If Moderately or Very, please give details in the box below*

* *Additional details for L, P and Q if appropriate*

*** L**

*** P**

*** Q**

Exposure Scores

Worker's name ______________________ Date __________

Back

Back Posture (A) & Weight (H)

	A1	A2	A3
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 1

Back Posture (A) & Duration (J)

	A1	A2	A3
J1	2	4	6
J2	4	6	8
J3	6	8	10

Score 2

Duration (J) & Weight (H)

	J1	J2	J3
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 3

Now do **ONLY** 4 if static
OR 5 and 6 if manual handling

Static Posture (B) & Duration (J)

	B1	B2
J1	2	4
J2	4	6
J3	6	8

Score 4

Frequency (B) & Weight (H)

	B3	B4	B5
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 5

Frequency (B) & Duration (J)

	B3	B4	B5
J1	2	4	6
J2	4	6	8
J3	6	8	10

Score 6

Total score for Back
Sum of scores 1 to 4 **OR**
Scores 1 to 3 plus 5 and 6 ______

Shoulder/Arm

Height (C) & Weight (H)

	C1	C2	C3
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 1

Height (C) & Duration (J)

	C1	C2	C3
J1	2	4	6
J2	4	6	8
J3	6	8	10

Score 2

Duration (J) & Weight (H)

	J1	J2	J3
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 3

Frequency (D) & Weight (H)

	D1	D2	D3
H1	2	4	6
H2	4	6	8
H3	6	8	10
H4	8	10	12

Score 4

Frequency (D) & Duration (J)

	D1	D2	D3
J1	2	4	6
J2	4	6	8
J3	6	8	10

Score 5

Total score for Shoulder/Arm
Sum of Scores 1 to 5 ______

Wrist/Hand

Repeated Motion (F) & Force (K)

	F1	F2	F3
K1	2	4	6
K2	4	6	8
K3	6	8	10

Score 1

Repeated Motion (F) & Duration (J)

	F1	F2	F3
J1	2	4	6
J2	4	6	8
J3	6	8	10

Score 2

Duration (J) & Force (K)

	J1	J2	J3
K1	2	4	6
K2	4	6	8
K3	6	8	10

Score 3

Wrist Posture (E) & Force (K)

	E1	E2
K1	2	4
K2	4	6
K3	6	8

Score 4

Wrist Posture (E) & Duration (J)

	E1	E2
J1	2	4
J2	4	6
J3	6	8

Score 5

Total score for Wrist/Hand
Sum of Scores 1 to 5 ______

Neck

Neck Posture (G) & Duration (J)

	G1	G2	G3
J1	2	4	6
J2	4	6	8
J3	6	8	10

Score 1

Visual Demand (L) & Duration (J)

	L1	L2
J1	2	4
J2	4	6
J3	6	8

Score 2

Total score for Neck
Sum of Scores 1 to 2 ______

Driving

M1	M2	M3
1	4	9

Total for Driving ______

Vibration

N1	N2	N3
1	4	9

Total for Vibration ______

Work pace

P1	P2	P3
1	4	9

Total for Work pace ______

Stress

Q1	Q2	Q3	Q4
1	4	9	16

Total for Stress ______

Interpreting the scores

Exposure scores for body areas
The total score for each body area is determined from the interactions between the exposure levels for the relevant risk factors (see table below), and their subsequent addition.

Important risk factors	
Back	Wrist/hand
• load weight • duration • frequency of movement • posture	• force • duration • frequency of movement • posture
Shoulder/arm	Neck
• load weight • duration • task height • frequency of movement	• duration • posture • visual demand

It is important to take note of which interactions contribute most to the overall score for each body area.

The exposure scores for the back, shoulder/arm, wrist/hand and neck have been categorised into 4 exposure categories: Low, Moderate, High or Very High.

	Exposure level			
Score	Low	Moderate	High	Very High
Back (static)	8-15	16-22	23-29	29-40
Back (moving)	10-20	21-30	31-40	41-56
Shoulder/arm	10-20	21-30	31-40	41-56
Wrist/hand	10-20	21-30	31-40	41-46
Neck	4-6	8-10	12-14	16-18

Even if the exposure score is Low, it is important to note that one or two interactions may be contributing disproportionately to the score (i.e. a score of 8 or more).

For Moderate, High and Very High scores, there are likely to be several interactions that should be identified and reduced. It is also possible that one or two interactions are at the highest levels (i.e. 10 or 12) of exposure. These should be addressed urgently to reduce the level of exposure for these factors.

These interactions should be monitored and reviewed as injury to the body could occur if exposure continues.

Exposure scores for other factors
The exposure scores for driving, vibration and work pace have been categorised into three exposure categories: Low, Moderate, High. Stress has a fourth category: Very High. Where scores are Moderate or High, or Very High, the level of exposure should be reduced.

	Exposure level			
Score	Low	Moderate	High	Very High
Driving	1	4	9	-
Vibration	1	4	9	-
Work pace	1	4	9	-
Stress	1	4	9	16

APPENDIX - VIII

Epidemiology standardization Project

AST-DLD-78A **ALLQUESTIONNAIRES**

Name: Date:

Address:

Dateof Birth: Marital status: 1. Married 2. Unmarried

Educational qualification

These questions pertain mainly to your chest. Please answer yes or no if possible/ If a question does not appear to be applicable to you, check the does not apply space. If you are I doubt about whether your answer is yes or no, record no.

COUGH:

7A. Do you usually have a cough? (Count a cough with first smoke or on first going out of doors.

Exclude clearing of throat). If no, skip to question 7C. 1. Yes-- 2.No--

A. Do you usually cough as much as 4 to 6 times a day, 1. Yes-- 2.No—

B. 4 or more days out of the week?

C. Do you usually cough at all on getting up, or first 1. Yes--
2.No-- thing in the morning?

D. Do you usually cough at all during the rest of the 1. Yes--
2.No-- day or night?

IF YES TO ANY OF ABOVE (A, B, C, OR D), ANSWER THE FOLLOWING: IF NOTO ALL CHECK DOES NOT APPLY AND SKIP TO THE NEXT PAGE.

E. Do you usually cough like this on most days for 1. Yes--
2.No-- 3 consecutive months or more during they ears?

For how many years many years have you had this cough? 1. No. of years-- 2. No--

PHLEGM:

8A. Do you usually bring up phlegm from your chest? 1. Yes-- 2.No--

(Counting phlegm with the first smoke or first going out-of-doors. Exclude phlegm from the nose. Count swallowed phlegm.)

(If no, skip to 8C).

B. Do you usually bring up phlegm like this as 1.Yes-- 2. No--

C. Do you usually bring up phlegm at all on getting up, 1.Yes-- 2. No-- or first thing in the morning?

D. Do you usually bring up phlegm at all during the 1.Yes-- 2.No-- rest of the day or at night?

<u>IF YES TO ANY OF THE ABOVE (84 b/C/D), ANSWER THE FOLLOWING; IF NOTO ALL CHECK DOES NOT APPLY AND SKIP TO NEXT PAGE.</u>

E. Do you bring up phlegm like this on most days for 1. Yes-- 2.No-- 3 consecutive months or more during the year? 3. Does not apply--

F. For how many years have you had trouble phlegm? 1. Number of years------ <u>EPISODES OF COUGH ANDPHLEGM:</u>

9A. Have you had periods or episodes of (increased*) 1. Yes-- 2. No-- Cough and phlegm lasting for 3 weeks or more each years?

*(For persons who usually have cough and/or phlegm) IF YES TO 9A:

For how long have you had at least such episode/year? 1. No. of years---2.Does not apply---

<u>WHEEZING:</u>

10A. Does your chest ever sound wheezy or whistling?

1. When you have a cold? 1.Yes-- 2. No—
2. Occasionally apart from colds? 1. Yes-- 2. No—
3. Most days or nights? 1.Yes-- 2.No-- IF YES TO 1, 2, OR 3 IN10A:

b. For how many years has this been present? 1. No. Of years-- 2. Does not apply-

11A. Have you ever had an attack of wheezing that 1.Yes-- 2.No-- IF YES TO11A:

B. How old were you when you had your first such attack? 1. Age in years -- 2. Not apply—

C. Have you have had 2 or more such episodes?1.Yes-- 2. No—

D. Have you ever required medicine/treatment for the attack (?) 1. Yes-- 2. No -- 3. Does

not apply?

BREATHLESSNESS:

12. If disable from walking by any condition other than heart or lung diseases please describe and proceed to question 14A.

13A. Are you troubled by shortness of breath when

hurrying on level/walking up as lighth 1.Yes-- 2.No—

IF YES TO13A:

B. Do you have to walk slower than people of your 1.Yes--

2.No-- age on the level because of breathlessness?

C. Do you ever have to stop for breath when walking 1.Yes--

2.No-- at your own pace on the level?

D. Do you ever have to stop for breath when walking about 100yards

(or after few minutes) on the level? 1. Yes---- 2. No---- 3. Does not apply---

E. Are you too breathless to leave the house or breathless on dressing or undressing?

1. Yes---- 2. No---- 3. Does not apply---

CHEST COLD AND CHEST ILLNESS:

14A. If you get a cold, if usually go your chest?

(Usually more than ½the time). 1.Yes---- 2. No---- 3. Does not apply---

15A. During the past 3 years, have you had any chest illness that has kept you off work, indoors at home, or in bed? 1. No illness-- 2. Does not apply----------

IF YES TO 15A:

B. Did you produce phlegm with any the sechest illnesses? 1. Yes---- 2.No----

C. In the last 3 yrs, how many such illnesses, with (increased) phlegm, did you have which lasted a week or more? 1. No illness-- 2. Does not apply----------

--**PASTILLNESS:**

16. Did you have any lung trouble before the ageof16? 1.Yes---- 2. No----

17. Have you ever had any of the following? 17A. Attacks of bronchitis? 1. Yes- 2. No-

IF YES TO17A:

B. was it confirmed by a doctor? 1.Yes---- 2.No----

C. At what age was your first attack? -------------------------- Age in years.

2A. Pneumonia (including bornhopneumonia)?1.Yes---- 2.No----

IF YES TO2A:

B. Was it confirmed by a doctor? 1.Yes---- 2. No----

C. At what age did you first have it? --------------------------- Age in years.

3A. Hay fever? 1.Yes---- 2.No----

IF YES TO 3A:

B. Was it confirmed by a doctor? 1.Yes----

2.No---- C. At what age did it star ------------------------------------- Age in years.

18A. You ever had chronic bronchitis? 1.Yes----

2.No---- IF YES TO18A:

B. Do you still have it? 1.Yes---- 2. No----

C. Was it confirmed by a doctor?1.Yes---- 2.No----

D. At what age did it start? --------------------------------- Age in years.

19A. Have you ever had emphysema? 1.Yes----

2.No---- IF YES TO19A:

B. Do you still have it? 1.Yes---- 2. No----

C. Was it confirmed by a doctor? 1.Yes----

2.No---- D. At what age did it start? ---------------------------------- Age in years.

20A. Have you ever had asthma? 1.Yes----

2.No---- IF YES TO20A:

B. Do you still have it? 1.Yes---- 2. No----

C. Was it confirmed by a doctor? 1.Yes----

2.No---- D. At what age did it start?----------------------------------- Age in years.

E. If you no longer have it, at what age did it stop? ------------- Age in years.

21A. Any other chest illness?1. Yes---- 2. No---- 3. Please specify--------------

B. Any chest operations? 1.Yes---- 2. No---- 3. Please specify--------------

C. Any chest illness? 1.Yes---- 2. No---- 3. Please specify--------------

22A. Has a doctor ever told you have that you had heart trouble? 1. Yes---- 2. No----

IF YES TO 22A: Have you ever had treatment for

heart trouble in the past 10years?1.Yes---- 2.No----

23A. Has a doctor ever told you that you had high blood pressure? 1. Yes--- 2. No----

IF YES TO 223A:

B. Have you had any treatment for high blood pressure 1.Yes----
2.No---- (hypertension) in last 10 years.

OCCUPATIONAL HISTORY:

24A. Have you ever worked full time (30 hours/ week or more)1.Yes----
2.No---- For 6 month or more?

IF YES TO 24A:

B. Have you ever worked for a year or more in any dusty job? 1. Yes---- 2. No----
Specify job--Total years of worked----------------------
Was dust exposure: 1. Mild---------- 2. Moderate------------ 3.Severe--------------------
C. Have you ever been exposed to gas or chemical fumes in your work? 1. Yes-- 2. No--
Specify job/ industry------------------------------ Total years worked------------------------
Was exposed: 1. Mild---------- 2. Moderate------------ 3.Severe-----------------
----
D. What has been your usual occupation or job, the one you have worked at the longest?
1. Job/occupation: --
2. Number of years employed in this occupation---
3. Business, field, or industries--

25. TOBACCO SMOKING:

Have you ever smoked cigarettes? (No means less 20 packs of cigarettes or 12 oz of tobacco in life time or less than I cigarette a day for 1 year.). 1. Yes---- 2. No---- IF YES TO25:

b. Dou you now smoke cigarettes (as of 1monthago)? 1. Yes---- 2.No----
C. How old were you when you first started regular cigarette smoking? ---Age in years.
D. If you have stopped smoking cigarettes completely--------------------- Age in years.
E. How many cigarettes do you smoke per day now? ------------------ cigarette per day.
F. On the average of the entire time you smoked------------------------ cigarette per day.
How many cigarettes did you smoke per day?-------------------------------
G. Do/did you inhale the cigarette smoke? 1. Not at all; 2.Slightly;
3.Moderately; 4.Deeply.

26A. Have you ever smoked a pipe regularly? (Yes means more than 12 oz of tobacco in al if time). 1.Yes---- 2. No--

IF YES TO 26A:

FOR PERSONS WHO HAVE EVER SMOKED:

1. How old were you when you started to smoke a pipe regularly? -------------------Age.

2. If you have stopped smoking a pipe completely,(i). Aged stopped-----------(ii).Check if still smoking pipe------------------------ (iii). Does not apply------------------------
How old were you when you stopped? -------------------- Age in years.

C. On the average over the entire time you smoked a pipe, how much pipe to baccodid you smoke per week? -- oz /week.

D. How much pipe tobacco are you smoking now? -------------------------- or per week.

E. Do you/ did you inhale the pipe smoke?1. Never smoked 2. Not at all 3. Slightly--------4. Moderately --------------- 5. Deeply-----------------------------------

27A. Have you ever smoked cigars regularly? 1.Yes----
2.No---- (Yes means more than 1 cigar a week for ayear).

FAMALY HISTORY:

28. We either of your natural parents ever told by a doctor that they had a chronic lung condition such as:

	Father		Mother	
	Yes	No	Yes	No
A. Chronic bronchitis	--------	--------	--------	--------
B. Emphysema	--------	--------	--------	--------
C. Asthma	--------	--------	--------	--------
D. Lung cancer	--------	--------	--------	--------
E. Other chest condition	--------	--------	--------	--------
29A. Is parent currently live?	--------	--------	--------	--------

B. Please specify-

--------Age if living

--------Age of death

--------Age of death

--------Do not know

C. Please specify cause of death---

APPENDIX – IX

QUESTIONNAIRE: Evaluation of Existing chisels

Dimension of existing Chisel:

1. Weight of the chisel :(g).
2. Length of the handle: (cm).
3. Circumference of handle in griping area: (cm).
4. Shape of chisel handle: Flat / inwards curved with any angle: (0).

Questions:

Please put (√) mark in the appropriate place for your answer:

1. Do you feel any trouble (ache or pain) during using the chisel? Yes/No
2. In which part of your body you feel discomfort?

Neck/ Shoulder/ elbow/ wrist/ palm/ fingers/ upper back/ lower back/ Hip/ other

3. How bad was pain/BPD duding the work episode? Mild pain/ Severe/ Very Severe
4. Is the discomfort continuous? Yes /No
5. Is the problem persists even after the work? Yes /No
6. Whether the discomfort is due to use of the existing chisel? Yes / No
7. Whether any accident occurred due to using existing chisel? Yes /No
8. Any problem on existing chisel? Yes /No Please mention these problems…………………………
9. Do you prefer any change of existing chisel? Yes /No If yes, what change do you suggest?..........................
10. Do you prefer the present weight ofexisting chisel? Yes /No If no, what change do you suggest?

Increase/ Decrease by_ g.

11. Do you prefer present length of handle of existing chisel? Yes /No If no, what change do you suggest?

Increase/Decrease by cm.

12. Do you feel any difficulty in gripping of the handle of existing chisel? Yes / No

If yes, i) what problem you face in gripping during work?................

a) Slippery b) Diameter unsuitable

ii) What is your suggestion to prevent slip/warm problem?

b) Change of diameter of grip area: Increase/ Decrease by----cm

13. Do you prefer present diameter of handle of existing chisel? Yes /No If no, what change do you suggest?

Increase/Decrease by cm.

14. Do you prefer present length of blade of existing chisel? Yes / No If no, what change do you suggest? Increase / Decrease by cm.

16. Any other problem on existing chisel?

17. Any special suggestion for modification of existing chisel?

APPENDIX –X

QUESTIONNAIRE: Evaluation of Existing workstation

Questions:

Please put (√) mark in the appropriate place for your answer:

1. Do you feel any trouble (ache, pain, numbness or BPD) during using the workstation? Yes /No

2. In which part of your body you feel any discomfort?

Neck/ Shoulder/ elbow/ wrist/ palm/ fingers/ upper back/ lower back/ Hip/ other

3. What was the extent of pain/BPD during performing the work ? Mild pain / Severe / Very Severe

4. Is the discomfort continues throughout the work session? Yes / No

5. Is the problem persists even after the work? Yes / No

6. Do you feel that the discomfort is due to use of the existing workstation? Yes / No

7. Whether any accident occurred due to using existing workstation? Yes / No

8. Any problem on existing workstation? Yes / No

If yes, Please mention the problems…………………………

9. Do you prefer any change of existing workstation? Yes / No

If yes, what change do you suggest? ....

10. Do you prefer the present height of existing workstation? Yes / No

If yes, what change do you suggest?

Increase/ Decrease by ______cm approximately

11. Do you prefer present length of existing workstation?

Yes / No

If yes, what change do you suggest?

Increase/ Decrease by _____cm. approximately

12. Any other problem on existing workstation?

13. Any special suggestion for modification of existing workstation?