

A Step-by-Step Guide

Rapid Upper Limb Assessment (RULA)



Rapid Upper Limb Assessment (RULA)

RULA was developed to evaluate the exposure of individual workers to ergonomic risk factors associated with upper extremity MSD. The RULA ergonomic assessment tool considers biomechanical and postural load requirements of job tasks/demands on the neck, trunk and upper extremities. A single page worksheet is used to evaluate required body posture, force, and repetition. Based on the evaluations, scores are entered for each body region in section A for the arm and wrist, and section B for the neck and trunk. After the data for each region is collected and scored, tables on the form are then used to compile the risk factor variables, generating a single score that represents the level of MSD risk.

RULA Employee Assessment Worksheet

Task Name: _____ Date: _____

A. Arm and Wrist Analysis

Step 1: Locate Upper Arm Position:

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

Step 2: Locate Lower Arm Position:

Step 2a: Adjust...
If either arm is working across midline or out to side of body: Add +1

Step 3: Locate Wrist Position:

Step 3a: Adjust...
If wrist is bent from midline: Add +1

Step 4: Wrist Twist:

Step 5: Look-up Posture Score in Table A:

Using values from steps 1-4 above, locate score in Table A

Step 6: Add Muscle Use Score
If posture mainly static (i.e. held >10 minutes), or if action repeated occurs 4X per minute: +1

Step 7: Add Force/Load Score
If load < 4.4 lbs. (intermittent): +0
If load 4.4 to 22 lbs. (intermittent): +1
If load 4.4 to 22 lbs. (static or repeated): +2
If more than 22 lbs. or repeated or shocks: +3

Step 8: Find Row in Table C
Add values from steps 5-7 to obtain Wrist and Arm Score. Find row in Table C.

Scores

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

Table C		Neck, Trunk, Leg Score					
Wrist / Arm Score		1	2	3	4	5	6
1	1	2	3	3	4	5	5
1	2	2	3	4	4	5	5
1	3	3	3	4	4	5	6
2	1	2	3	3	4	5	5
2	2	2	3	4	4	5	5
2	3	3	3	4	4	5	6
3	1	2	3	3	4	5	5
3	2	2	3	4	4	5	5
3	3	3	3	4	4	5	6
4	1	2	3	3	4	5	5
4	2	2	3	4	4	5	5
4	3	3	3	4	4	5	6
5	1	2	3	3	4	5	5
5	2	2	3	4	4	5	5
5	3	3	3	4	4	5	6
6	1	2	3	3	4	5	5
6	2	2	3	4	4	5	5
6	3	3	3	4	4	5	6

Scoring: (final score from Table C)
 1-2 = acceptable posture
 3-4 = further investigation, change may be needed
 5-6 = further investigation, change soon
 7 = investigate and implement change

B. Neck, Trunk and Leg Analysis

Step 9: Locate Neck Position:

Step 9a: Adjust...
If neck is twisted: +1
If neck is side bending: +1

Step 10: Locate Trunk Position:

Step 10a: Adjust...
If trunk is twisted: +1
If trunk is side bending: +1

Step 11: Legs:
If legs and feet are supported: +1
If not: +2

Table B: Trunk Posture Score

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

Step 12: Look-up Posture Score in Table B:
Using values from steps 9-11 above, locate score in Table B

Step 13: Add Muscle Use Score
If posture mainly static (i.e. held >10 minutes), or if action repeated occurs 4X per minute: +1

Step 14: Add Force/Load Score
If load < 4.4 lbs. (intermittent): +0
If load 4.4 to 22 lbs. (intermittent): +1
If load 4.4 to 22 lbs. (static or repeated): +2
If more than 22 lbs. or repeated or shocks: +3

Step 15: Find Column in Table C
Add values from steps 12-14 to obtain Neck, Trunk and Leg Score. Find Column in Table C.

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The RULA was designed for easy use without need for an advanced degree in ergonomics or expensive equipment. Using the RULA worksheet, the evaluator will assign a score for each of the following body regions: upper arm, lower arm, wrist, neck, trunk, and legs. After the data for each region is collected and scored, tables on the form are then used to compile the risk factor variables, generating a single score that represents the level of MSD risk as outlined below:

Score	Level of MSD Risk
1-2	negligible risk, no action required
3-4	low risk, change may be needed
5-6	medium risk, further investigation, change soon
6+	very high risk, implement change now

Getting Ready

The evaluator should prepare for the assessment by interviewing the worker being evaluated to gain an understanding of the job tasks and demands, and observing the worker’s movements and postures during several work cycles. Selection of the postures to be evaluated should be based on: 1) the most difficult postures and work tasks (based on worker interview and initial observation), 2) the posture sustained for the longest period of time, or 3) the posture where the highest force loads occur. The RULA can be conducted quickly, so multiple positions and tasks within the work cycle can usually be evaluated without a significant time and effort. When using RULA, only the right or left side is assessed at a time. After interviewing and observing the worker, the evaluator can determine if only one arm should be evaluated or if an assessment is needed for both sides.

Using the RULA – Example

The RULA worksheet is divided into two body segment sections on the labeled A and B. Section A (left side) covers the arm and wrist. Section B (right side) covers the neck, trunk and legs. This segmenting of the worksheet ensures that any awkward or constrained postures of the neck, trunk or legs which might influence the postures of the arms and wrist are included in the assessment.

The evaluator should score Group A (Arm & Wrist) postures first, then score Group B (Neck, Trunk & Legs) postures for left and right. For each region, there is a posture scoring scale and additional adjustments outlined on the worksheet which need to be considered and accounted for in the score.

Steps 1-4: Right Arm & Wrist Analysis



A. Arm and Wrist Analysis

Step 1: Locate Upper Arm Position:

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

Step 2: Locate Lower Arm Position:

Step 2a: Adjust...
 If either arm is working across midline or out to side of body: Add +1

Step 3: Locate Wrist Position:

Step 3a: Adjust...
 If wrist is bent from midline: Add +1

Step 4: Wrist Twist:

If wrist is twisted in mid-range: +1
 If wrist is at or near end of range: +2

Scores

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

Table C: Neck, Trunk, Leg Score

	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

Note: In step 1, a +3 score was used for upper arm position (45+ degrees). For step 2, a +2 score was given for the lower arm position (<60 degrees). The step 3 wrist score was +3 for wrist flexion (>15 degrees), and +1 was added for ulnar deviation. The step 4 wrist score is +2 because the wrist is twisted near the end range. Each score should be circled on Table A.

Steps 5-8: Calculate the score for Group A as outlined below:

A. Arm and Wrist Analysis

Step 1: Locate Upper Arm Position:

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

3
Upper Arm Score

Step 2: Locate Lower Arm Position:

Step 2a: Adjust...
 If either arm is working across midline or out to side of body: Add +1

2
Lower Arm Score

Step 3: Locate Wrist Position:

Step 3a: Adjust...
 If wrist is bent from midline: Add +1

Step 4: Wrist Twist:

If wrist is twisted in mid-range: +1
 If wrist is at or near end of range: +2

2 Wrist Twist Score **4** Wrist Score

Step 5: Look-up Posture Score in Table A:
 Using values from steps 1-4 above, locate score in Table A

Step 6: Add Muscle Use Score
 If posture mainly static (i.e. held >10 minutes),
 Or if action repeated occurs 4X per minute: +1

Step 7: Add Force/Load Score
 If load < .4.4 lbs. (intermittent): +0
 If load 4.4 to 22 lbs. (intermittent): +1
 If load 4.4 to 22 lbs. (static or repeated): +2
 If more than 22 lbs. or repeated or shocks: +3

Step 8: Find Row in Table C
 Add values from steps 5-7 to obtain Wrist and Arm Score. Find row in Table C.

5 Posture Score A
 +
0 Muscle Use Score
 +
2 Force / Load Score
 =
7 Wrist & Arm Score

Scores

Table A		Wrist Score							
Upper Arm	Lower Arm	1		2		3		4	
		Wrist Twist	Wrist	Wrist Twist	Wrist	Wrist Twist	Wrist	Wrist Twist	Wrist
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	2	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	5	5	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		Neck, Trunk, Leg Score						
Wrist / Arm Score	1	1	2	3	4	5	6	7+
	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

Scoring: (final score from Table C)
 1-2 = acceptable posture
 3-4 = further investigation, change may be needed
 5-6 = further investigation, change soon
 7 = investigate and implement change

7
RULA Score

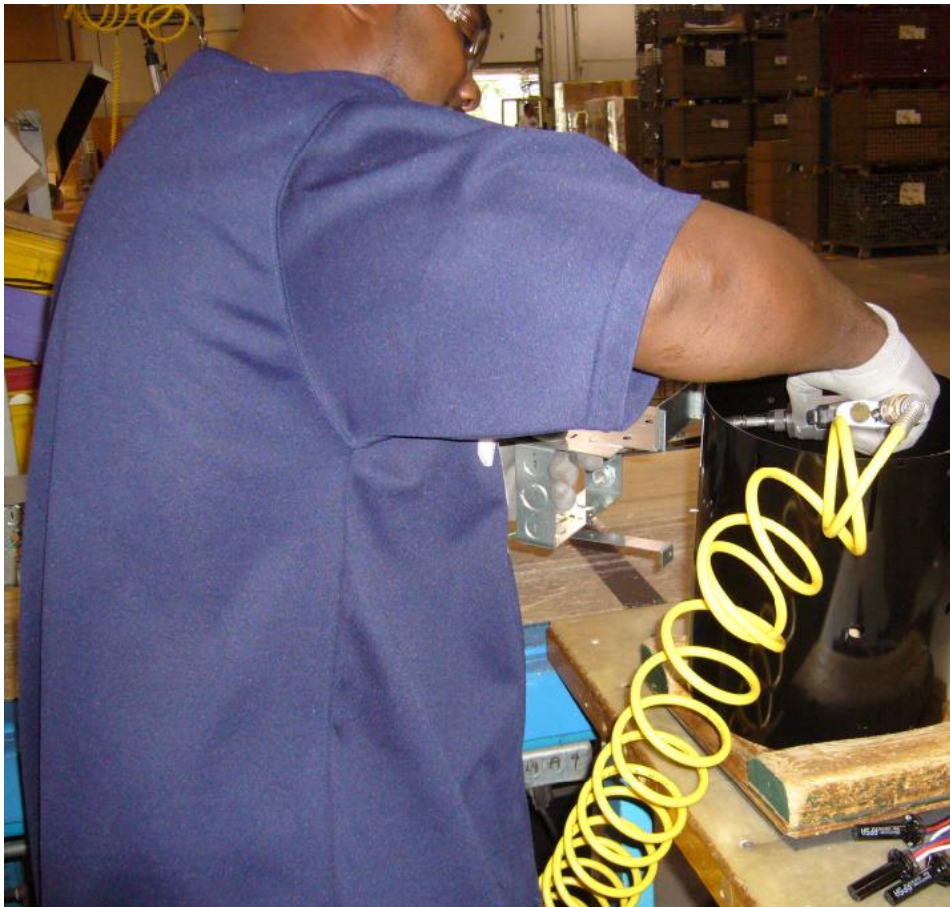
Step 5: Using values from steps 1-4, locate the score for this step in table A.

Step 6: Add the muscle use score to this box. In this example, the posture is not sustained for more than 10 minutes, and not repeated 4x per minute. Therefore, the score is 0.

Step 7: In this example, the load is greater than 4.4 lbs. and repeated. Therefore, the score is +2.

Step 8: Add the values in steps 5-7 to obtain the Wrist / Arm Score.

Steps 9-11: Neck, Trunk and Leg Analysis



B. Neck, Trunk and Leg Analysis

Step 9: Locate Neck Position:

Step 9a: Adjust...
 If neck is twisted: +1
 If neck is side bending: +1

Step 10: Locate Trunk Position:

Step 10a: Adjust...
 If trunk is twisted: +1
 If trunk is side bending: +1

Step 11: Legs:
 If legs and feet are supported: +1
 If not: +2

Final scores shown in boxes:
 Neck Score: 3
 Trunk Score: 2
 Leg Score: 1

Table B: Trunk Posture Score

Neck Posture Score	Trunk Posture Score					
	1	2	3	4	5	6
1	1	2	3	4	5	6
2	2	3	4	5	6	7
3	3	4	5	6	7	8
4	4	5	6	7	8	9
5	5	6	7	8	9	10
6	6	7	8	9	10	11

Note: In step 9, a +3 score was used for the neck position (>20 degrees). The step 10 score is +1 due to a trunk position of 0-20 degrees. Each score should then be circled on Table B.

Steps 12-15: Calculate the total score for Group B as outlined below:

B. Neck, Trunk and Leg Analysis

Step 9: Locate Neck Position:

3
Neck Score

Step 9a: Adjust...
If neck is twisted: +1
If neck is side bending: +1

Step 10: Locate Trunk Position:

2
Trunk Score

Step 10a: Adjust...
If trunk is twisted: +1
If trunk is side bending: +1

Step 11: Legs:
If legs and feet are supported: +1
If not: +2

1
Leg Score

Table B: Trunk Posture Score

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

Step 12: Look-up Posture Score in Table B:
Using values from steps 9-11 above, locate score in Table B

3
Posture B Score

Step 13: Add Muscle Use Score
If posture mainly static (i.e. held >10 minutes),
Or if action repeated occurs 4X per minute: +1

0
Muscle Use Score

Step 14: Add Force/Load Score
If load < .4.4 lbs. (intermittent): +0
If load 4.4 to 22 lbs. (intermittent): +1
If load 4.4 to 22 lbs. (static or repeated): +2
If more than 22 lbs. or repeated or shocks: +3

2
Force / Load Score

Step 15: Find Column in Table C
Add values from steps 12-14 to obtain Neck, Trunk and Leg Score. Find Column in Table C.

5
Neck, Trunk, Leg Score

Step 12: Using values from steps 9-11, locate the score for this step in table B.

Step 13: Add the muscle use score to this box. In this example, the posture is not sustained for more than 10 minutes, and not repeated 4x per minute. Therefore, the score is 0.

Step 14: In this example, the load is greater than 4.4 lbs. and repeated. Therefore, the score is +2.

Step 15: Add the values in steps 12-14 to obtain the Neck, Trunk, & Leg Group B Score.

Determine Final RULA Score:

Use Table C to determine the final RULA score as shown below.

ERGONOMICS PLUS RULA Employee Assessment Worksheet Task Name: _____ Date: _____

A. Arm and Wrist Analysis

Step 1: Locate Upper Arm Position:

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

Upper Arm Score: 3

Step 2: Locate Lower Arm Position:

Step 2a: Adjust...
 If either arm is working across midline or out to side of body: Add +1

Lower Arm Score: 2

Step 3: Locate Wrist Position:

Step 3a: Adjust...
 If wrist is bent from midline: Add +1

Wrist Twist Score: 2

Step 4: Wrist Twist:
 If wrist is twisted in mid-range: +1
 If wrist is at or near end of range: +2

Wrist Score: 4

Step 5: Look-up Posture Score in Table A:
 Using values from steps 1-4 above, locate score in Table A

Posture Score A: 5

Step 6: Add Muscle Use Score
 If posture mainly static (i.e. held >10 minutes), Or if action repeated occurs 4X per minute: +1

Muscle Use Score: 0

Step 7: Add Force/Load Score
 If load < 4.4 lbs. (intermittent): +0
 If load 4.4 to 22 lbs. (intermittent): +1
 If load 4.4 to 22 lbs. (static or repeated): +2
 If more than 22 lbs. or repeated or shocks: +3

Force / Load Score: 2

Step 8: Find Row in Table C
 Add values from steps 5-7 to obtain Wrist and Arm Score. Find row in Table C.

Wrist & Arm Score: 7

Scores

Table A

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

Table B: Trunk Posture Score

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

Table C

Wrist / Arm Score	Neck, Trunk, Leg Score					
	1	2	3	5	6	7+
1	1	2	3	3	5	5
2	2	2	3	4	4	5
3	3	3	3	4	4	5
4	3	3	3	4	5	6
5	4	4	4	5	6	7
6	4	4	5	6	7	7
7	5	5	6	7	7	7
8	5	5	6	7	7	7

Scoring: (final score from Table C)
 1-2 = acceptable posture
 3-4 = further investigation, change may be needed
 5-6 = further investigation, change soon
 7 = investigate and implement change

Final RULA Score: 7

B. Neck, Trunk and Leg Analysis

Step 9: Locate Neck Position:

Step 9a: Adjust...
 If neck is twisted: +1
 If neck is side bending: +1

Neck Score: 3

Step 10: Locate Trunk Position:

Step 10a: Adjust...
 If trunk is twisted: +1
 If trunk is side bending: +1

Trunk Score: 2

Step 11: Legs:
 If legs and feet are supported: +1
 If not: +2

Leg Score: 1

Step 12: Look-up Posture Score in Table B:
 Using values from steps 9-11 above, locate score in Table B

Posture B Score: 3

Step 13: Add Muscle Use Score
 If posture mainly static (i.e. held >10 minutes), Or if action repeated occurs 4X per minute: +1

Muscle Use Score: 0

Step 14: Add Force/Load Score
 If load < 4.4 lbs. (intermittent): +0
 If load 4.4 to 22 lbs. (intermittent): +1
 If load 4.4 to 22 lbs. (static or repeated): +2
 If more than 22 lbs. or repeated or shocks: +3

Force / Load Score: 2

Step 15: Find Column in Table C
 Add values from steps 12-14 to obtain Neck, Trunk and Leg Score. Find Column in Table C.

Neck, Trunk, Leg Score: 5

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Final RULA Score = 7

In this example, the final RULA score of 7 indicates high risk and calls for engineering and/or work method changes to reduce or eliminate MSD risk as outlined in the chart on page 1.

Implemented ergonomic improvements:



The assembly process was changed to install the access plate prior to riveting the can together. A fixture was fabricated to hold the can open while the access plate is being installed. A straight or “in-line” pneumatic screw driver (on a tool balancer) is now used to improve upper extremity work postures and eliminate the force required. A follow-up analysis using the RULA worksheet was performed upon completion of this ergonomic process and tool improvement. When using the new work process and tools, the RULA total score is reduced from 7 to 1.

About Ergonomics Plus

Since 1989, Ergonomics Plus consultants have been working with companies to reduce injury risk and improve productivity and efficiency.

Over two decades of experience has taught us that a proactive, prevention-focused process that is comprehensive and works to improve both the work and the worker gets the best results.

In a comprehensive MSD prevention process:

- Ergonomic issues are systematically identified and resolved with cost-effective solutions.
- Employees are educated on proper lifting techniques, ergonomic principles, body mechanics and self-care tools and techniques.
- Costly injuries are averted with a proactive, prevention-focused approach (early intervention) that seeks out and eliminates worker fatigue and discomfort.

Think Prevention!

We call our process described above the E+ System, and it's the methodology we use for our clients.

If you are interested in learning more about our proactive MSD prevention process, get in touch with us today:

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CONTACT US



About the Author -- Mark Middlesworth, MS, ATC/L, CEES

Mark has been providing workplace injury prevention and ergonomics consulting services to industry since 1989. He is the founder of Ergonomics Plus, author of Building Wellness from the Inside Out and a member of the National Speakers Association.