

In: Lueder, R (1996) A Proposed RULA for Computer Users. Proceedings of the Ergonomics Summer Workshop, UC Berkeley Center for Occupational & Environmental Health Continuing Education Program, San Francisco, August 8-9, 1996.

A Proposed RULA for Computer Users

**Rani Lueder, CPE
Humanics ErgoSystems, Inc.¹**

Acknowledgments:

This writer wishes to express gratitude to Dr. Nigel Corlett and Dr. Lynn McAtamney for their valuable assistance and collaboration.

The Rapid Upper Limb Assessment (RULA) was developed by Dr. Lynn McAtamney and Dr. Nigel Corlett of the University of Nottingham's Institute of Occupational Ergonomics. It was first described in a 1993 issue of the journal *Applied Ergonomics*².

This ergonomic technique evaluates individuals' exposures to postures, forces and muscle activities that have been shown to contribute to Repetitive Strain Injuries (RSIs). Use of this ergonomic evaluation approach results in a risk score between one and seven, where higher scores signify greater levels of apparent risk.

A low RULA score does not guarantee that the workplace is free of ergonomic hazards, and a high score does not assure that a severe problem exists. It was developed to detect work postures or risk factors that deserve further attention.

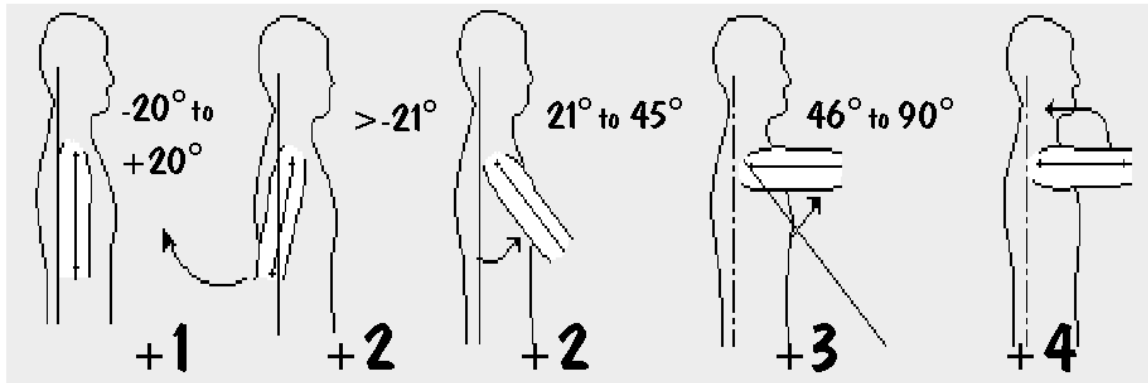
In collaboration with Rani Lueder, Drs. Corlett and Barson recently refined the RULA for a specific application. These changes were established to increase its' relevance for evaluating computer work. This version was incorporated into an expert system.

A review of these suggested changes follow.

¹ Humanics ErgoSystems, Inc. P.O. Box 17388, Encino, CA, 91416-7388.

² McAtamney, L. and Corlett, E.N. (1993) RULA: A survey method for the investigation of work-related upper limb disorders. *Applied Ergonomics*, 24 (2), 91-99.

In: Lueder, R (1996) A Proposed RULA for Computer Users. Proceedings of the Ergonomics Summer Workshop, UC Berkeley Center for Occupational & Environmental Health Continuing Education Program, San Francisco, August 8-9, 1996.



+ 1 = Upper arm abducted

- 1 = Arms supported

+ 1 = Raised shoulders OR extensive phone use.

RULA: Upper Arm

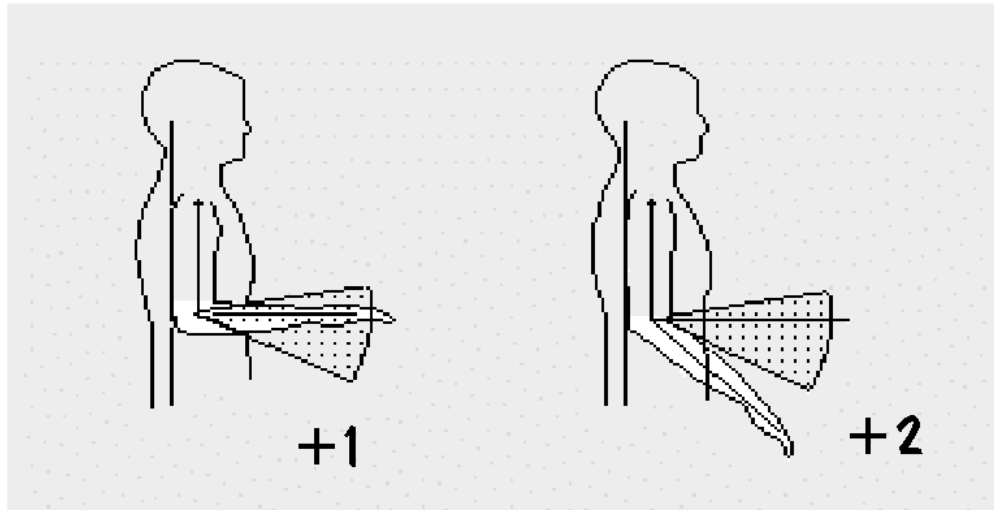
Notes:

- ✓ +1 point = Work with raised shoulders
- ✓ OR speak on the phone on average at least 10 min./hr
- ✓ AND sometimes "scrunch" neck when speaking on the phone.

(Maximum 1 point for any of these conditions)

Maximum Upper Arm Score = 6 points.

In: Lueder, R (1996) A Proposed RULA for Computer Users. Proceedings of the Ergonomics Summer Workshop, UC Berkeley Center for Occupational & Environmental Health Continuing Education Program, San Francisco, August 8-9, 1996.



+ 1 = Arms cross midline or out to the side

RULA: Lower Arm

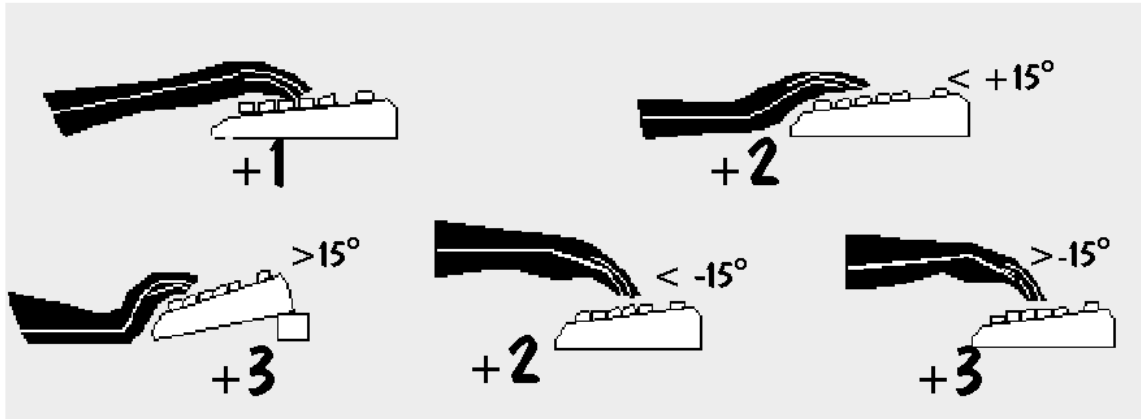
Notes:

- ✓ - 1 = Lower arms approximately parallel.
- ✓ +1 = Arm crossed midline OR extends to the side.

Exception: Sit with low keyboard AND negative slope = - 1

Maximum Lower Arm Score = 3 points.

In: Lueder, R (1996) A Proposed RULA for Computer Users. Proceedings of the Ergonomics Summer Workshop, UC Berkeley Center for Occupational & Environmental Health Continuing Education Program, San Francisco, August 8-9, 1996.



- + 1 = Wrist bent (ulnar/radial)
- + 1 = Wrist neutral or twisted at mid-range
- + 2 = Wrists twisted near extreme

Notes: **RULA: Wrists**

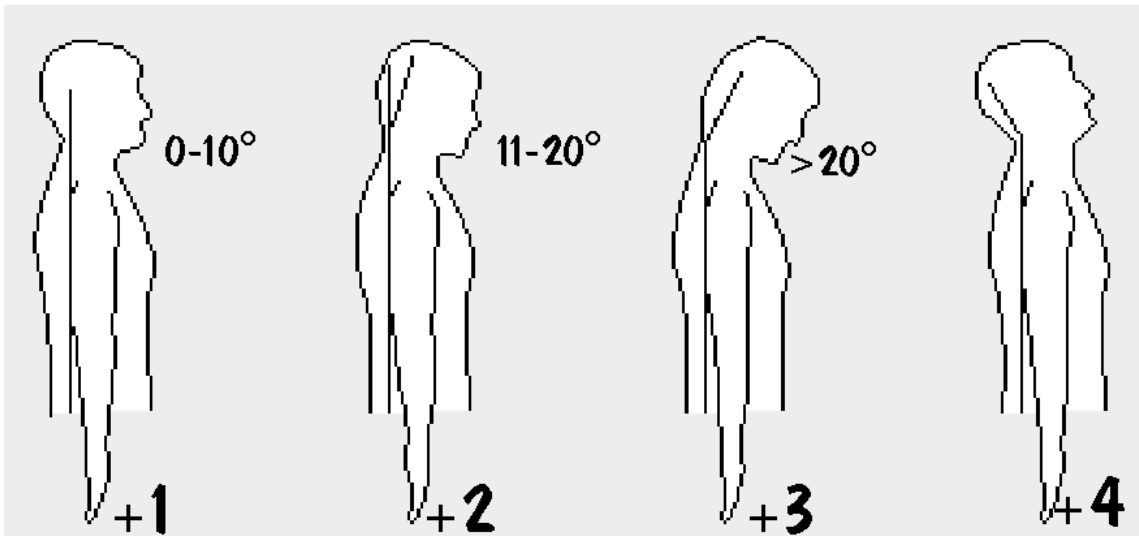
~~(For asymmetrical postures, ratings are conducted for each side independently)~~

- + 1 = Wrist bent away from midline (ulnar/radial).
- + 1 = Wrist neutral, or exhibits mid-range of twist.
- + 2 = Wrist twisted at/near maximum range.

(Under consideration: if keyboard unstable OR keyboard wobbles OR keyboard on uneven platform = + 1 point.)

Maximum Wrist Score = 6 points.

In: Lueder, R (1996) A Proposed RULA for Computer Users. Proceedings of the Ergonomics Summer Workshop, UC Berkeley Center for Occupational & Environmental Health Continuing Education Program, San Francisco, August 8-9, 1996.



+ 1 = Neck twisted

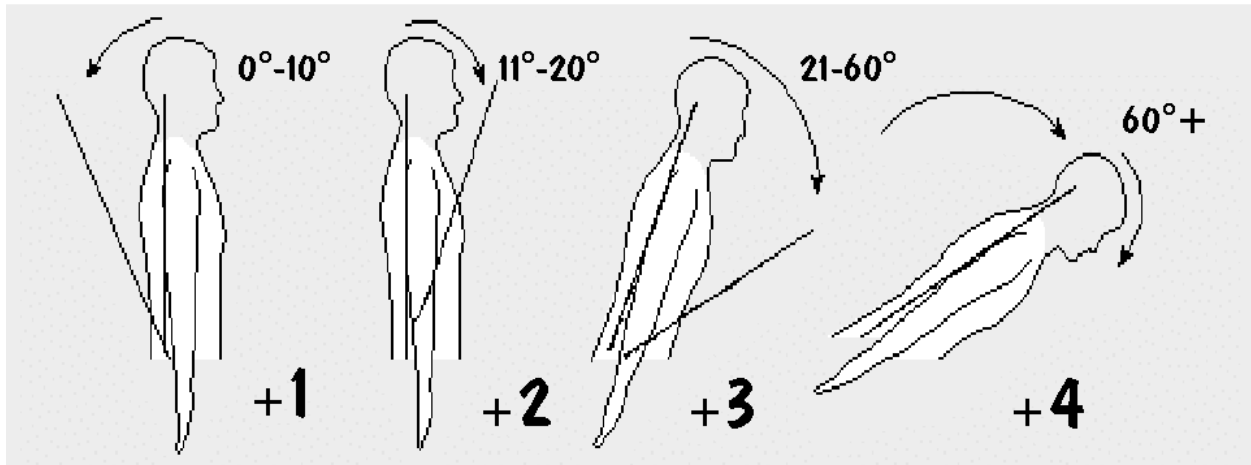
+ 1 = Neck bent to the side

RULA: Neck

Notes:

Maximum Neck Score = 6 points.

In: Lueder, R (1996) A Proposed RULA for Computer Users. Proceedings of the Ergonomics Summer Workshop, UC Berkeley Center for Occupational & Environmental Health Continuing Education Program, San Francisco, August 8-9, 1996.



+ 1 = Trunk twisted

+ 1 = Trunk bent to the side

RULA: Trunk

Notes:

Maximum Trunk Score = 6 points.

In: Lueder, R (1996) A Proposed RULA for Computer Users. Proceedings of the Ergonomics Summer Workshop, UC Berkeley Center for Occupational & Environmental Health Continuing Education Program, San Francisco, August 8-9, 1996.

Leg Score

- + 1 seated legs/feet supported + balanced**
- + 1 standing legs/feet supported + balanced**
- + 2 if legs/feet unsupported or balance uneven**

Muscle Use Score

- + 1 if spend more than 2 hr at a time at the computer without getting up.**

Notes:

Maximum Leg Score = 2 points.

Maximum Muscle Use score = 1 point.

Muscle use score of 1 point is added when users respond that they regularly spend more than 2 hours at a time working at the computer without getting up for any reason.

In: Lueder, R (1996) A Proposed RULA for Computer Users. Proceedings of the Ergonomics Summer Workshop, UC Berkeley Center for Occupational & Environmental Health Continuing Education Program, San Francisco, August 8-9, 1996.

Force / Load Score

Total hr/day at computer:

≥ 4 hr. and ≤ 6 hr. = 1

> 6 hr./day = 2

Notes:

Maximum Force Score = 2 points.

In: Lueder, R (1996) A Proposed RULA for Computer Users. Proceedings of the Ergonomics Summer Workshop, UC Berkeley Center for Occupational & Environmental Health Continuing Education Program, San Francisco, August 8-9, 1996.

Table A
(Upper Limb Posture Score)

		Wrist Score							
		1		2		3		4	
		Wrist	Twist	Wrist	Twist	Wrist	Twist	Wrist	Twist
UpperArm	LowerArm	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	5	5	6	6	7
	2	5	6	6	6	6	6	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 A Score + Muscle Use + Force Score ⇒ Score C

In: Lueder, R (1996) A Proposed RULA for Computer Users. Proceedings of the Ergonomics Summer Workshop, UC Berkeley Center for Occupational & Environmental Health Continuing Education Program, San Francisco, August 8-9, 1996.

Table B
(Neck, Trunk, Legs Posture Score)

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

Table B Score + Muscle Use + Force Score ⇒ Score D

In: Lueder, R (1996) A Proposed RULA for Computer Users. Proceedings of the Ergonomics Summer Workshop, UC Berkeley Center for Occupational & Environmental Health Continuing Education Program, San Francisco, August 8-9, 1996.

Table C
(Grand Total Score Table)

Grand Total Score									
	Score D = Score from Table B + Muscle Use Score + Force								
Score C*	1	2	3	4	5	6	7	8	9
1	1	2	3	3	4	5	5	5	5
2	2	2	3	4	4	5	5	5	5
3	3	3	3	4	4	5	6	6	6
4	3	3	3	4	5	6	6	6	6
5	4	4	4	5	6	7	7	7	7
6	4	4	5	6	6	7	7	7	7
7	5	5	6	6	7	7	7	7	7
8	5	5	6	7	7	7	7	7	7
9	5	5	6	7	7	7	7	7	7

* Where Score C =

Upper Limb Posture from Table A + Muscle Use (left/right) + Force (left/right)

ACTION LEVEL ONE :

A score of one or two indicates that posture is acceptable if it is not maintained or repeated for long periods of time.

ACTION LEVEL TWO:

A score of three or four indicates that further investigation is needed and changes may be required.

ACTION LEVEL THREE:

A score of five or six indicates investigation and changes are required soon.

ACTION LEVEL FOUR:

A score of seven or more indicates investigation and changes are required immediately.