The Strain Index of Moore and Garb for Distal Upper Extremity Disorders

Overview: Moore and Garb developed the Strain Index to evaluate the risk of distal upper extremity disorders in occupational settings. This can help identify jobs that are likely to result in worker injury. The authors are from the Medical College and University of Wisconsin.

Parameters:

(1) intensity of exertion

(2) duration of exertion (as percent of cycle)

(3) efforts per minute

(4) hand and wrist posture

(5) speed of work

(6) duration per day in hours

Parameter	Finding	Multiplier
intensity of exertion	light	1
	somewhat hard	3
	hard	6
	very hard	9
	near maximal	13
duration of exertion	< 10% of cycle	0.5
	10 – 29% of cycle	1.0
	30 – 49% of cycle	1.5
	50 – 79% of cycle	2.0
	>= 80% of cycle	3.0
efforts per minute	< 4	0.5
	4 to 8	1.0
	9 to 14	1.5
	15 – 19	2.0
	>= 20	3.0
hand and wrist posture	very good	1.0
	good	1.0

	fair	1.5
	bad	2.0
	very bad	3.0
speed of work	very slow	1.0
	slow	1.0
	fair	1.0
	fast	1.5
	very fast	2.0
duration per day	<= 1 hour	0.25
	1.01 – 2 hours	0.50
	2.01 – 4 hours	0.75
	4.01 – 8 hours	1.00
	> 8 hours	1.50

where:

• The duration per day had overlapping breakpoints in the original table.

strain index = (multiplier for intensity of exertion) * (multiplier for duration of exertion) * (multiplier for efforts per minute) * (multiplier for hand and wrist posture) * (multiplier for speed of work) * (multiplier for duration per day)

Interpretation:

• minimum score: 0.0625

• maximum score: 351

• The higher the score the greater the risk for distal upper extremity injury.

Strain Index	**Interpretation**
<= 3	probably safe
4 or 5	may be safe
6	may be hazardous
>= 7	probably hazardous

References: Moore JS Garg A. The strain index: A proposed method to analyze jobs for risk of distal upper extremity disorders. Am Ind Hyg Assoc J. 1995; 56: 443-458