

Physically demanding work and physical activity in health care workers: Developing key messages for integrated interventions

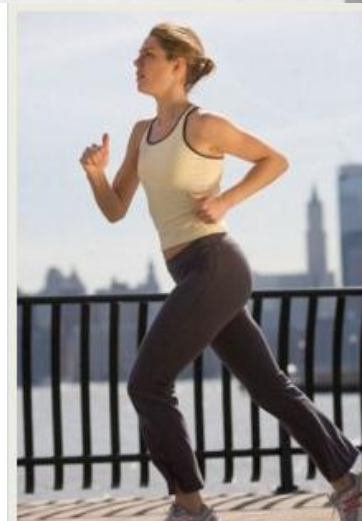
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Research question:

How does work of physically demanding jobs in patient care units contribute to workers' moderate and vigorous levels of activity?



Physical demands at work



Moderate and vigorous
physical Activity

Demands and Activity of 50 workers

- ☞ Brief self-report of activities at end of 7 days
- ☞ Measured activity for 7 days
- ☞ Measured demands for single shift

PARTICIPANT		H1	H2	TOTAL
NURSE	F	20	16	36
	M	0	4	4
PCA	F	4	3	7
	M	2	1	3
TOTAL		26	24	50

PCA → Patient Care Assistant

H1, H2 → Two hospitals



Self-reported levels

At work	Mean	(SD)
Moderate activity (mins/week)	206	207
Vigorous activity (mins/week)	57	122
Outside of work		
Moderate activity (mins/week)	190	161
Vigorous activity (mins/week)	146	223

Guidelines recommend 150 of moderate minutes per week

Physical Activity → Accelerometry 7 Days

- ↻ Parsed data into work and non-work
- ↻ Each minute assigned to
 - ↻ Sedentary (Sitting)
 - ↻ Lifestyle and Light (standing)
 - ↻ Moderate (walking)
 - ↻ Vigorous (running)
- ↻ Minutes of Moderate and Vigorous in modified 10-minute bouts



Work contributions to physical activity

	Mean (SD)	25 th %tile	50 th %tile	75 th %tile
<i>At work (min)</i>				
Moderate	30 (32)	8	17	42
Vigorous	0 (1)	0	0	0
<i>At work (% Shift)</i>				
Sedentary	54 (12)	45	52	58
Light & Lifestyle	45 (11)	41	47	53
Moderate	1 (1)	0	1	2
Vigorous	0 (0)	0	0	0
<i>Both at work and outside of work (min)</i>				
Moderate	165 (95)	86	159	224
Vigorous	18 (44)	0	1	11

Without 10-minute bouts, 27 workers (56%) met the recommended minutes
 Work → 30 minutes (20%) of the 150 required

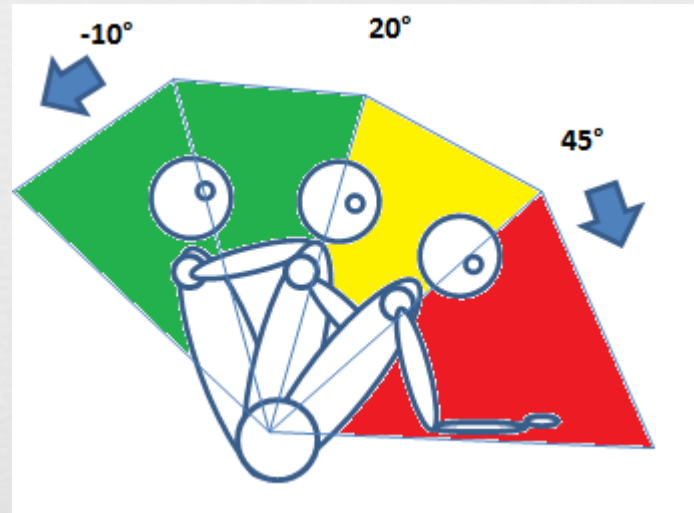
Work contributions to physical activity

	Mean (SD)	25 th %tile	50 th %tile	75 th %tile
<i>At work (min)</i>				
Moderate	2 (6)	0	0	0
Vigorous	0 (0)	0	0	0
<i>Both at work and outside of work (min)</i>				
Moderate	63 (83)	11	32	82
Vigorous	14 (39)	0	0	0

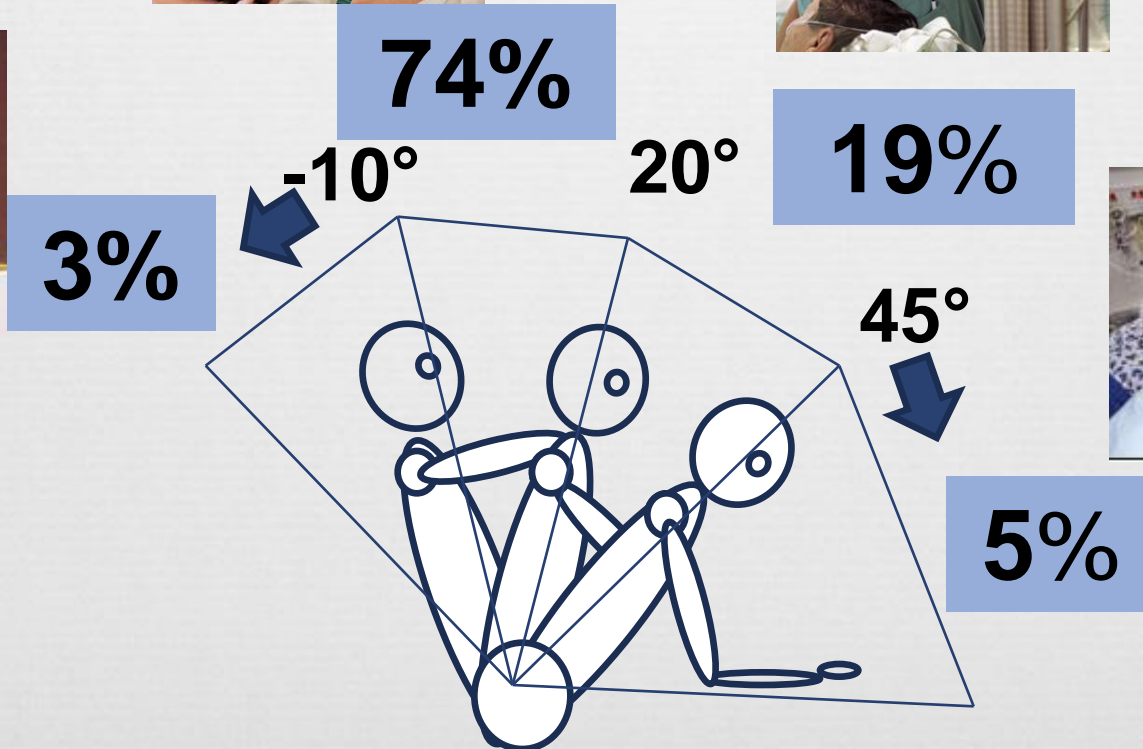
With modified bouts, only 6 workers (13%) met the recommended minutes
 Work → 2 minutes of the 150 required

Work Demands → Torso Flexion

- Measured torso flexion for a single work shift
- Duration in different levels of flexion
- Frequency of bends to 20 and 45 degrees of flexion



Work demands → Torso Flexion (% Shift)



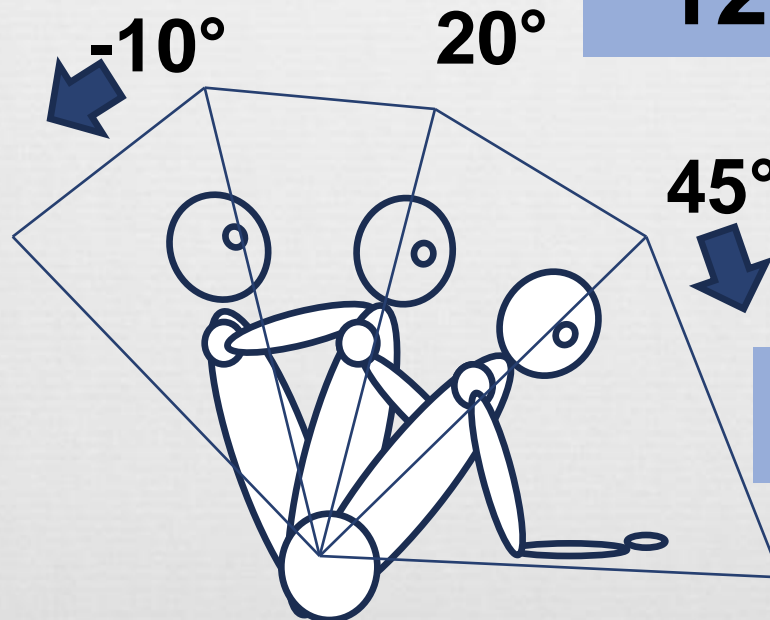
Work demands → Frequency of flexion



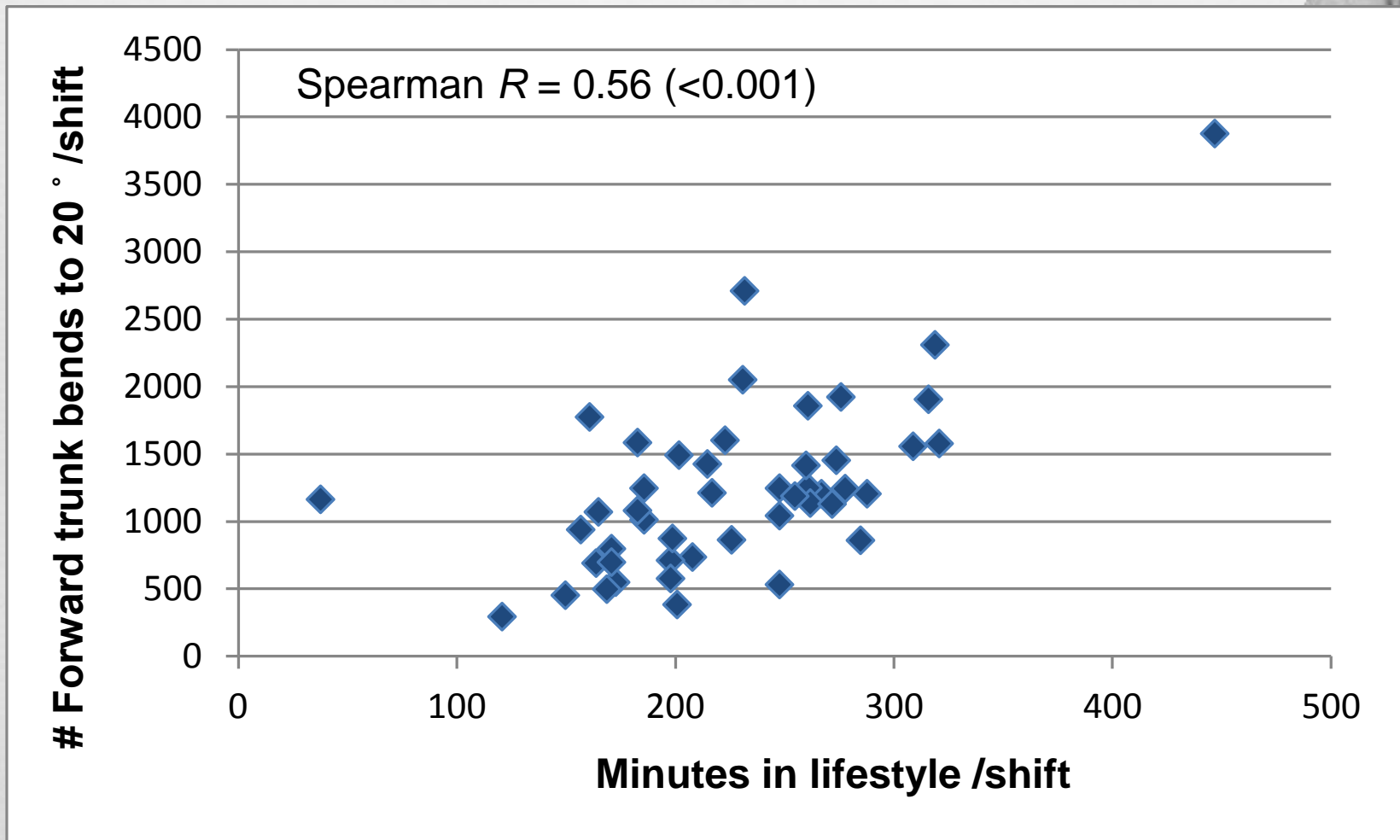
126/hour



34/hour



Work demands → Physical activity @work



Work demands → Physical activity @ work

Weak correlation between demands and activity

R (p-values)	Sedentary	Lifestyle	Light	Moderate
20° bends/shift	0.21 (0.15)	0.56 (<0.001)	0.27 (0.07)	0.21 (0.16)
45° bends/shift	0.08 (0.60)	0.41 (0.005)	0.37 (0.01)	0.16 (0.27)

Demands correlated with levels below moderate activity levels

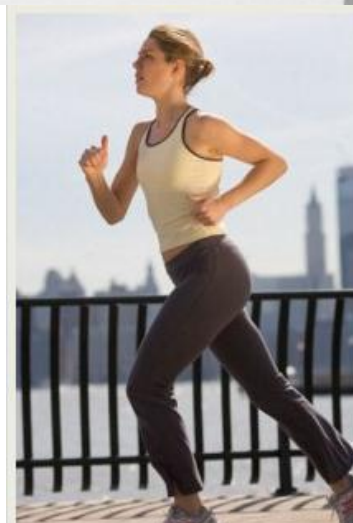
Frequency of bends of lifts would slightly penalize the NIOSH recommended weight limit due to physiologic limits.

Study limitations

Accelerometer, small convenient population,
bending, 10-minute bout?



Physical demands at work



Moderate and vigorous
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Messages for interventions (Summary)

Work is demanding, but it contributes at best about 20% of the recommended levels. Demands are below moderate activity. Have to do more? Fatigued? Creative solutions needed.



Physical demands at work



Moderate and vigorous
physical Activity

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