

Title: Technical field measurements of muscular workload during stocking activities in supermarkets: cross-sectional study

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Supplementary Table 1. Full participant characteristics.

	Whole cohort				Chain A				Chain B				Chain C				Chain D				Chain E			
	n	Mean	SD	%	n	Mean	SD	%	n	Mean	SD	%	n	Mean	SD	%	n	Mean	SD	%	n	Mean	SD	%
Age (years)	75	30	12		16	35	15		13	23	4		16	28	9		15	27	10		15	37	14	
Gender	75				16				13				16				15				15			
Women				37				63			8				38					33				
Men				63				38			92				63					67				
Height (cm)	67	175	10		14	172	10		10	181	10		16	174	9		14	178	10		13	175	12	
Weight (kg)	67	76	16		14	72	15		10	80	11		16	72	14		14	77	16		13	79	20	
Work experience within MMH		9.7	10.0		14	12.4	8.5		10	7.1	3.3		16	6.6	7.1		14	8.0	11.3		13	14.5	14.3	
Smoking	67				14				10				16				14				13			
Yes, daily				31				36			10				50					7				46
Yes, now and then				9				7			20			6						7				8
Ex-smoker				18				14			40			13						21				8
No, never				42				43			30			31						64				38
Physical activity during leisure (%)	67				14				10				16				14				13			
Mostly sedentary				18				29			0				19					14				23
Light exercise at least 4 h				51				57			30				44					43				77
Sports or heavy physical activity at least 4 h per week				18				7			40				25					21				
Training and competing regularly and several times a week				13				7			30				13					21				
Work factors																								
Busyness during typical/standard week (0-10)	67	6.7	1.7		14	6.6	1.8		10	6.2	1.5		16	7.4	1.3		14	6.0	2.1		13	6.9	1.5	
Physical exertion during lift of milk box (0-10, 15 steps)	67	5.8	3.1		14	5.3	2.3		10	4.9	2.7		16	6.9	3.1		14	6.9	3.6		13	4.2	2.9	
Physical exhaustion after typical workday (0-10)	67				14				10				16				14				13			
Not exhausted				3				0			0				6									8
A bit exhausted				28				29			40				13					36				31

Somewhat exhausted		40	43	50	38	36	38
Very exhausted		25	21	10	44	21	23
Completely exhausted		3	7	0	0	7	0
Mental exhaustion after typical workday (0-10)	67	14	10	16	14	13	
Not exhausted		3	7				8
A bit exhausted		25	14	40	13	43	23
Somewhat exhausted		39	29	40	44	36	46
Very exhausted		24	43	10	38	14	8
Completely exhausted		9	7	10	6	7	15
Well-rested the morning after a workday	67	14	10	16	14	13	
Almost always		16	14	20	0	21	31
Often		16	14	20	13	14	23
Sometimes		46	57	40	69	36	23
Seldomly		18	7	10	19	29	23
Never		3	7	10	0	0	0
Physical work ability	67	14	10	16	14	13	
Very good		39	21	70	50	21	38
Good		48	64	20	38	71	38
Fair		13	14	10	13	7	23
Poor		0	0	0	0	0	0
Very poor		0	0	0	0	0	0
Stressed during the past two weeks	67	14	10	16	14	13	
Always		1	0	10	0	0	0
Often		25	36	10	31	36	8
Sometimes		40	50	40	44	43	23
Seldomly		22	14	30	19	14	38
Never		10	0	10	6	7	31
Contradictory demands	67	14	10	16	14	13	
Always		3	7	0	0	0	8
Often		9	7	0	13	21	15
Sometimes		31	29	40	44	29	31
Seldomly		43	50	50	44	43	46

Never		13	7	10	0	7	
Job role certainty	67	14	10	16	14	13	
Always		51	50	50	44	43	69
Often		40	36	50	44	50	23
Sometimes		7	14	0	13	0	8
Seldomly		1	0	0		7	0
Never		0	0	0	0	0	0
Emotional distress during work	67	14	10	16	14	13	
Always		0	0	0	0	0	0
Often		13	14	10	19	14	8
Sometimes		28	43	10	38	21	23
Seldomly		34	36	40	25	50	23
Never		24	7	40	19	14	46
Influence at work	67	14	10	16	14	13	
Always		19	21	10	25	14	23
Often		39	29	30	31	64	38
Sometimes		24	29	20	25	14	31
Seldomly		15	21	30	19	7	0
Never		3	0	10	0	0	8
Need for very fast work	67	14	10	16	14	13	
Always		30	21	20	31	29	46
Often		46	50	50	50	50	31
Sometimes		19	29	20	19	21	8
Seldomly		4	0	10	0	0	15
Never		0	0	0	0	0	0
Belonging to work community	67	14	10	16	14	13	
Always		67	64	90	69	43	77
Often		25	29	10	25	43	15
Sometimes		4	0	0	6	14	0
Seldomly		1	0	0	0	0	8
Never		1	7	0	0	0	0
Superior's willingness to listen to problems	67	14	10	16	14	13	

Always			52		57		30		50		43		77					
Often			30		21		40		31		36		23					
Sometimes			12		14		20		13		14		0					
Seldomly			6		7		10		6		7		0					
Never			0		0		0		0		0		0					
Pain intensity during the last week (0-10)	67			14		10		16		14		13						
Headache		2.4	2.5		1.6	2.1		1.9	2.3		3.0	2.6		2.9	2.6		2.5	3.1
Neck		2.3	2.4		1.9	2.2		1.3	1.4		2.0	1.9		3.0	2.5		2.9	3.2
Shoulders		2.5	2.5		1.9	2.2		1.6	2.0		2.2	2.3		3.6	2.4		3.0	3.1
Upper back		2.1	2.3		1.4	2.1		1.0	1.2		2.4	2.0		3.1	2.3		2.5	3.2
Low-back		3.4	2.6		3.3	2.2		2.4	2.4		3.4	2.8		4.3	2.5		3.2	3.0
Elbows		0.6	1.5		0.1	0.5		0.4	1.0		0.6	1.5		1.1	1.7		0.8	2.0
Hands/wrists		1.9	2.4		1.1	1.7		1.0	1.8		3.0	3.0		2.6	2.5		1.2	2.3
Hips		1.3	2.3		0.2	0.6		0.7	1.6		1.4	2.3		2.4	2.7		1.5	2.9
Knees		1.9	2.4		1.4	1.8		1.5	1.5		2.3	2.5		2.6	2.9		1.5	2.9
Feet/ankles		2.4	2.6		3.4	3.0		1.0	1.3		2.1	2.4		3.7	2.6		1.5	2.2
Chronic musculoskeletal pain ≥ 3 months duration (Yes)	67			14		10		16		14		13						
Headache				18		21		10		19		14		23				
Neck				18		21		0		6		21		38				
Shoulders				19		21		10		19		14		31				
Upper back				18		14		10		25		14		23				
Low-back				27		36		30		19		21		31				
Elbows				3		0		0		6		0		8				
Hands/wrists				18		0		10		38		21		15				
Hips				16		7		10		13		36		15				
Knees				25		14		30		31		29		23				
Feet/ankles				30		43		10		31		29		31				
MSD-related sickness absence the past year	67			14		10		16		14		13						
No				88		79		90		88		100		85				
Yes, one workday				4		14		10		0		0		0				
Yes, two to five workdays				6		0		0		13		0		15				

Yes, more than 10 workdays				1				7												0			
MSD-interference on work (0-10)	67	2.9	2.9		14	3.5	3.1		10	1.5	2.1		16	3.3	3.1		14.0	3.4	2.4		13	2.0	3.4
MSD-interference on leisure-time activities (0-10)	67	2.9	3.3		14	3.0	3.4		10	2.2	3.1		16	3.3	3.3		14.0	3.3	3.2		13	2.5	3.8
General health status	67				14				10				16								13		
Excellent					13				7				40								7		23
Quite good					42				43				50								29		38
Good					37				50				10								50		31
Not good					7				0				0								14		8
Poor					0				0				0								0		0

Supplementary Table 2.

Department-specific neck/shoulder and low-back peak muscular workload estimates per chain presented as least square means (LSM) with 95% confidence intervals of the 95th percentile rank of nRMS (% nRMS (95% CI)). Significant differences ($p < 0.05$) between conditions are indicated with numbers in superscript.

Neck/shoulder			Low-back	
B			B	
Chain E ⁽¹⁾	18.3 (15.9-20.7)		Chain B ⁽¹⁾	20.9 (17.3-24.6) ^(3,4,5)
Chain A ⁽²⁾	19.2 (16.9-21.4)		Chain A ⁽²⁾	21.0 (17.9-24.1) ^(3,4,5)
Chain C ⁽³⁾	19.2 (17.0-21.4)		Chain D ⁽³⁾	26.7 (23.6-29.8) ^(1,2)
Chain B ⁽⁴⁾	19.6 (17.0-22.3)		Chain E ⁽⁴⁾	26.8 (23.5-30.0) ^(1,2)
Chain D ⁽⁵⁾	19.8 (17.5-22.1)		Chain C ⁽⁵⁾	27.3 (24.2-30.3) ^(1,2)
FV			FV	

Chain E ⁽¹⁾	19.7 (17.3-22.1) ^(4,5)		Chain B ⁽¹⁾	23.4 (19.8-27.1) ^(4,5)
Chain A ⁽²⁾	20.6 (18.3-22.8)		Chain A ⁽²⁾	23.6 (20.5-26.6) ^(3,4,5)
Chain D ⁽³⁾	20.6 (18.3-22.9)		Chain E ⁽³⁾	28.1 (24.8-31.3) ⁽²⁾
Chain C ⁽⁴⁾	23.6 (21.5-25.8) ⁽¹⁾		Chain D ⁽⁴⁾	29.0 (25.8-32.1) ^(1,2)
Chain B ⁽⁵⁾	23.6 (21.0-26.3) ⁽¹⁾		Chain C ⁽⁵⁾	31.9 (28.9-34.9) ^(1,2)
F				
Chain E ⁽¹⁾	16.4 (14.0-18.8) ⁽⁵⁾		Chain B ⁽¹⁾	19.7 (16.1-23.4) ⁽⁵⁾
Chain C ⁽²⁾	16.6 (14.4-18.8) ⁽⁵⁾		Chain A ⁽²⁾	21.2 (18.1-24.2)
Chain B ⁽³⁾	17.4 (14.7-20.0)		Chain E ⁽³⁾	23.0 (19.7-26.2)
Chain D ⁽⁴⁾	17.8 (15.4-20.1)		Chain C ⁽⁴⁾	23.4 (20.4-26.5)
Chain A ⁽⁵⁾	20.5 (18.2-22.7) ^(1,2)		Chain D ⁽⁵⁾	24.5 (21.3-27.6) ⁽¹⁾
M				
Chain E ⁽¹⁾	16.6 (14.3-19.0)		Chain B ⁽²⁾	19.5 (15.8-23.2) ^(4,5)
Chain B ⁽²⁾	16.8 (14.2-19.5)		Chain A ⁽¹⁾	19.9 (16.9-23.0) ^(4,5)
Chain A ⁽³⁾	17.7 (15.5-20.0)		Chain E ⁽³⁾	22.3 (19.1-25.5)
Chain C ⁽⁴⁾	18.1 (15.9-20.3)		Chain C ⁽⁴⁾	24.3 (21.3-27.4) ^(1,2)
Chain D ⁽⁵⁾	18.2 (15.9-20.5)		Chain D ⁽⁵⁾	24.9 (21.8-28.1) ^(1,2)
C				
Chain B ⁽¹⁾	17.7 (15.1-20.4) ⁽⁵⁾		Chain A ⁽¹⁾	19.6 (16.5-22.6) ^(4,5)
Chain C ⁽²⁾	18.9 (16.7-21.1)		Chain B ⁽²⁾	21.0 (17.3-24.7)
Chain A ⁽³⁾	19.7 (17.4-21.9)		Chain C ⁽³⁾	21.9 (18.9-25.0)
Chain D ⁽⁴⁾	19.9 (17.6-22.2)		Chain D ⁽⁴⁾	24.4 (21.3-27.6) ⁽¹⁾

Chain E ⁽⁵⁾	22.0 (19.7-24.4) ⁽¹⁾		Chain E ⁽⁵⁾	24.4 (21.2-27.7) ⁽¹⁾
D			D	
Chain D ⁽¹⁾	20.0 (17.8-22.3)		Chain A ⁽¹⁾	23.1 (20.1-26.2)
Chain E ⁽²⁾	20.1 (17.8-22.5)		Chain B ⁽²⁾	24.0 (20.4-27.7)
Chain B ⁽³⁾	21.2 (18.6-23.9)		Chain E ⁽³⁾	24.8 (21.6-28.1)
Chain C ⁽⁴⁾	21.8 (19.6-24.0)		Chain D ⁽⁴⁾	26.2 (23.1-29.3)
Chain A ⁽⁵⁾	22.9 (20.6-25.1)		Chain C ⁽⁵⁾	27.4 (24.3-30.4)