

Audrey Petit^{1,2}, Catherine Ha³, Julie Bodin¹, Fabien Le Marec¹, Aline Ramond^{1,4}, Yves Roquelaure^{1,2}

¹ LUNAM University, University of Angers, Laboratory of Ergonomics and Epidemiology in Occupational health, Angers, France

² CHU Angers, Angers, France

³ French Institute for Public Health Surveillance, Department of Occupational Health, Saint-Maurice, France

⁴ LUNAM University, University of Angers, Department of general practice, Angers, France

Objective

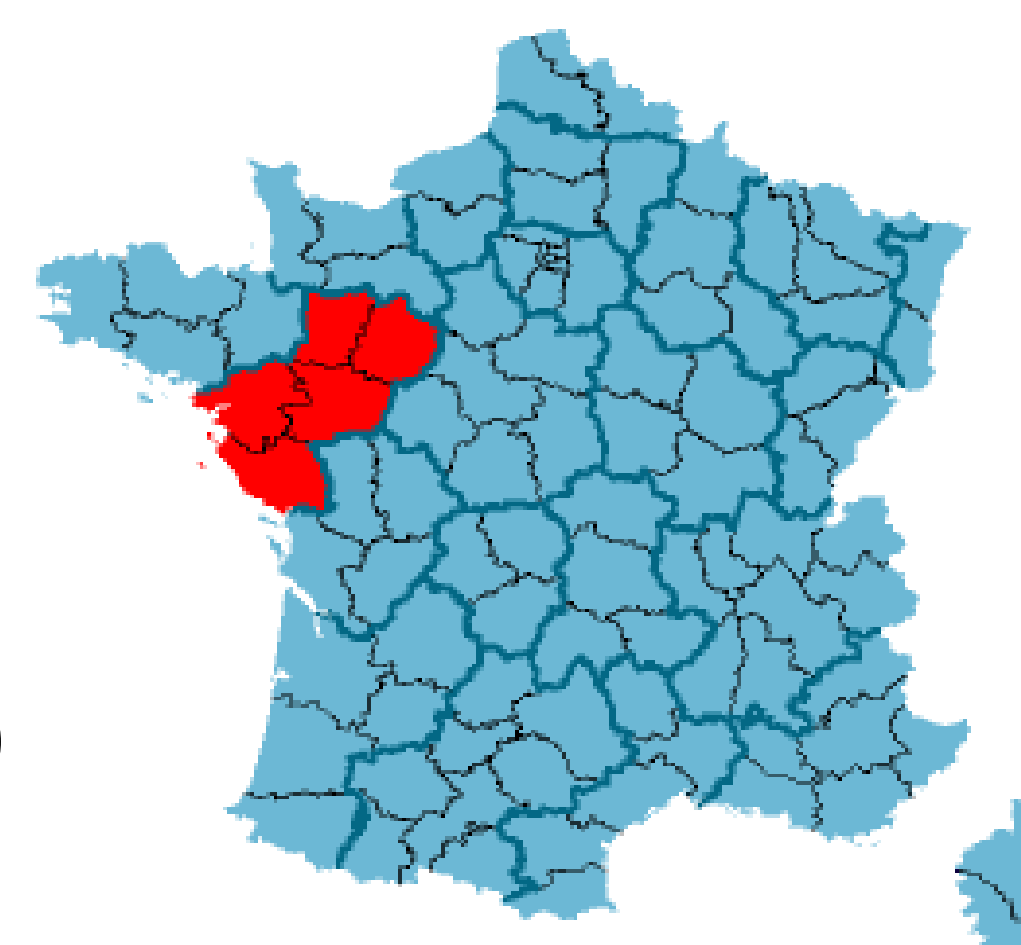
In recent years, emphasis was placed on the determinants of chronic low back pain (LBP) in a tertiary prevention perspective. However, acute and subacute LBP should remain a major goal of primary prevention in the workplace.

The objective of this study was to investigate the individual and occupational risk factors for common acute and subacute LBP in a large sample of French workers.

Methods

Study population

- Working population of the Pays de la Loire region, in France
- 83 occupational physicians were trained by the investigators to randomly include workers undergoing a mandatory annual health examination
- Between 2002 and 2005, 3,710 workers (58% men and mean age=38.7 ± 10.3 years) were included
- In 2007, a follow-up questionnaire was mailed to subjects (reminder letters until 2009)



Outcome

- The presence of LBP during the preceding 12 months at follow-up was identified using the « Nordic-style » questionnaire.
- LBP was studied into four categories:
 - No LBP (reference)
 - Short acute LBP: < 8 days during the preceding 12 months
 - Prolonged acute LBP: 8 to 30 days during the preceding 12 months
 - Subacute LBP: > 30 days during the preceding 12 months, but not daily
- Subjects reporting chronic LBP at follow-up were excluded.

Potential risk factors

- At baseline, potential risk factors were divided into four groups:
 - Personal factors
 - Organizational factors
 - Biomechanical factors
 - Psychosocial factors

Statistical analysis

The risk modelling of different durations of LBP was performed using a multinomial logit model:

- Only significant variables (p<0.05) were included in the final models. Age was retained regardless of statistical significance.
- Odds ratios (OR) were compared between short acute LBP, prolonged acute LBP and subacute LBP for each risk factor with a Wald test.
- Analyzes were stratified by gender.

Results

- 2,332 subjects (62.9%) fulfilled the follow-up self-administered questionnaire.
- Subjects with chronic LBP during the preceding 12 months in the follow-up survey (n=217) and those without answer to the question concerning the duration of LBP during the preceding 12 months (n=70) were excluded.
- The analyzes were conducted on 1,139 men and 906 women.

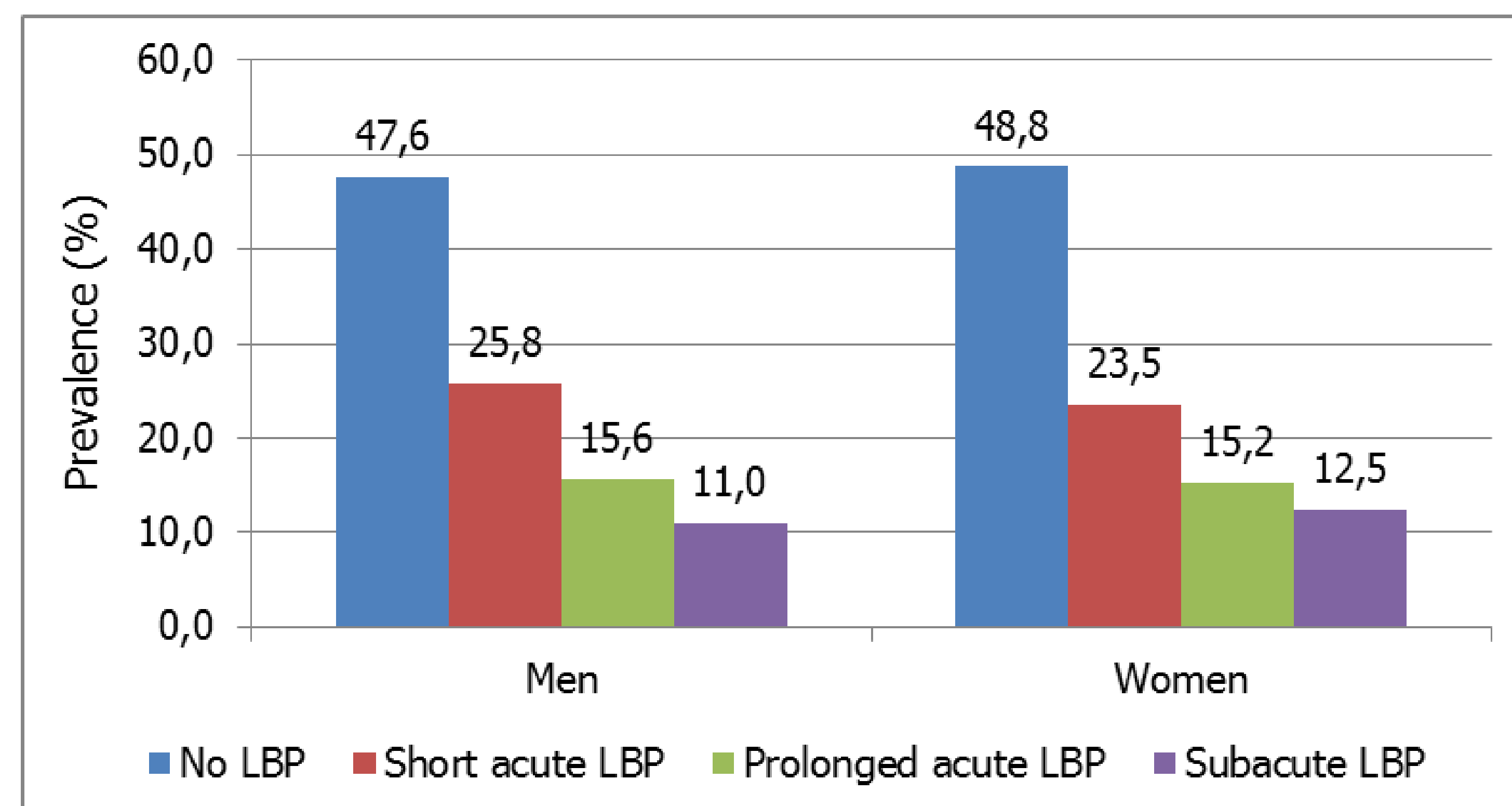


Table 1: Multinomial logistic model for risk factors for LBP in men

	N	Short acute LBP OR [95% CI]	Prolonged acute LBP OR [95% CI]	Subacute LBP OR [95% CI]	p
Age					0.003
< 40	548	1	1	1	
≥ 40	562	0.8 [0.6-1.02]	1.4 [0.996-2.0]	1.4 [0.97-2.2]	
High physical demand (RPE Borg scale ≥ 14) and bending the trunk (≥2h/day)					<0.001
No factor	579	1	1	1	
One factor	350	1.0 [0.7-1.4]	1.5 [1.01-2.2]	1.9 [1.2-3.0]	
Both	181	1.9 [1.3-2.9]	2.6 [1.6-4.2]	1.9 [1.1-3.5]	
Low support: colleagues and supervisor					0.012
No factor	567	1	1	1	
One factor	416	1.3 [0.98-1.8]	1.4 [0.9-2.0]	1.0 [0.6-1.5]	
Both	127	1.7 [1.05-2.8]	1.5 [0.8-2.7]	2.5 [1.4-4.4]	

For men (Table 1):

- Age was a stronger risk factor for prolonged acute LBP (OR 1.4) and subacute LBP (OR 1.4) than for short acute LBP (OR 0.8) (p=0,001 and p=0,004 respectively).
- High physical demand and bending the trunk (one factor) appeared to be a stronger risk factor for subacute LBP (OR 1.9) than for short acute LBP (OR 1.0) (p=0,006).

Table 2: Multinomial logistic model for risk factors for LBP in women

	N	Short acute LBP OR [95% CI]	Prolonged acute LBP OR [95% CI]	Subacute LBP OR [95% CI]	p
Age					0.084
< 40	421	1	1	1	
≥ 40	471	0.8 [0.6-1.1]	1.2 [0.8-1.8]	1.4 [0.9-2.2]	
Height*					0.004
≤ 166 cm	683	1	1	1	
> 166 cm	209	1.4 [0.9-2.1]	1.6 [1.02-2.6]	2.3 [1.5-3.8]	
High physical demand (RPE Borg scale ≥ 14) and bending the trunk (≥2h/day)					0.005
No factor	509	1	1	1	
One factor	267	1.2 [0.8-1.8]	1.8 [1.2-2.8]	1.5 [0.9-2.4]	
Both	116	1.6 [0.97-2.7]	1.7 [0.9-3.2]	2.8 [1.6-5.0]	

*Third quartile of the sample

For women (Table 2), height was a stronger risk factor for subacute LBP (OR 2.3) than for short acute LBP (OR 1.4) (p=0,043).

Conclusion

This prospective study showed the multifactorial origin of LBP and highlighted a limited number of individual and work-related risk factors. The impact of biomechanical factors seems to be more important than organizational and psychosocial factors. Analyzes failed to identify risk factors specifically related to the duration of LBP.