

Personal and work-related risk factors for incident rotator cuff syndrome in a French working population

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Context

- Musculoskeletal disorders (MSDs): One of the most significant and costly health problems in the working population
- Surveillance system for MSD implemented in the Pays de la Loire region by the French Institute for Public Health Surveillance in 2002-2005
- Rotator cuff syndrome (RCS): 7% of workers



Aim

To identify personal and work-related factors
for incident RCS
among a large French working population

Methods

- **Baseline: 2002-2005**
 - Network of 83 occupational physicians
 - 3,710 workers randomly selected
 - **Self-administered Questionnaire**
 - Individual factors
 - Work-related factors (work organization, biomechanical and psychosocial factors)
 - **Physical examination**

- **Follow-up: 2007-2010**
 - **Physical examination**

Case definition

- Rotator cuff syndrome defined following the recommendations of the European consensus Saltsa¹

Case definition 2: rotator cuff syndrome, based on symptoms and physical examination signs

Time rule: • Symptoms present now or on at least 4 days during the last 7 days

AND

Symptoms: • At least intermittent pain in the shoulder region without paresthesias; pain worsened by active elevation movement of the upper arm as in scratching of the upper back

AND

Signs: • At least one of the following tests positive:

- ▲ resisted shoulder abduction, external rotation, or internal rotation
- ▲ resisted elbow flexion
- ▲ painful arc on active upper arm elevation

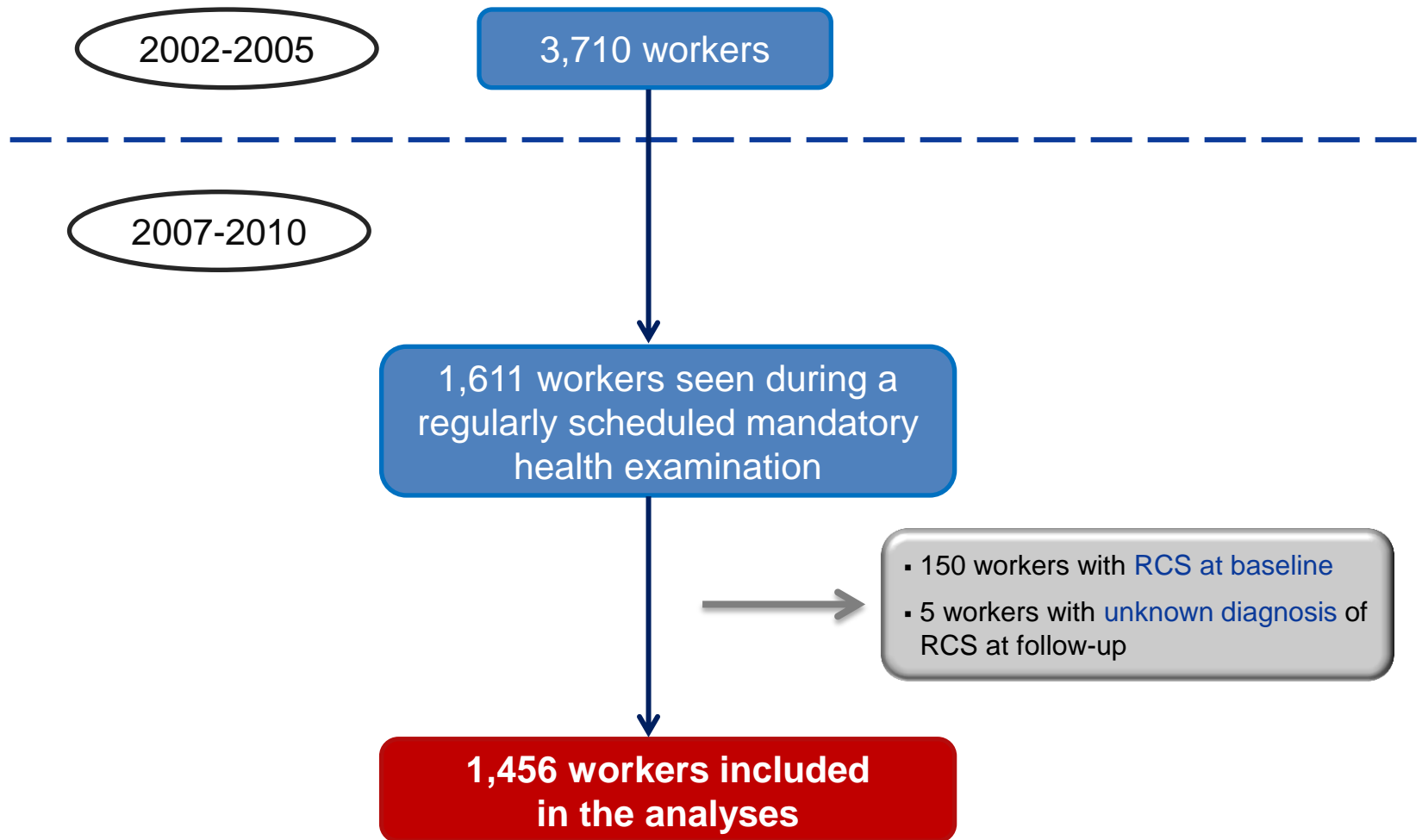
¹Sluiter JK, Rest KM, Frings-Dresen MH. Criteria document for evaluating the work-relatedness of upper-extremity musculoskeletal disorders. Scand J Work Environ Health. 2001;27 Suppl 1:1–102.

Analysis

- Logistic regression
 - Outcome:
 - Workers free of RCS at baseline with diagnosed RCS at follow-up.
 - Potential risk factors at baseline:
 - **Personal** factors (age, BMI,...)
 - **Work organization** (work pace dependent on automatic rate, job/task rotation, temporary employment, ...)
 - **Biomechanical factors** (arms above shoulder level, use of vibrating hand tools, perceived physical exertion (Borg),...)
 - **Psychosocial work factors** (validated French version of Karasek's Job Content Questionnaire)

- By gender

Results (1)



Results (2)

- 51 incident cases of RCS in men (6.1%)
- 45 cases in women (7.3%)

Results (3)

- **Bivariate analyses** showed that:
 - personal characteristics,
 - work organization,
 - biomechanical factors and
 - psychosocial factors
- were associated with incident RCS

Risk factors for incident RCS in men

Variable	OR	95% CI
Age		
<40	1	
40-44	2.3	(1.0 to 5.2)
45-49	4.7	(2.2 to 10.0)
≥50	3.7	(1.5 to 9.0)
High perceived physical exertion[†] <u>AND</u> Arms above shoulder level (≥2h/day)		
No factor	1	
One factor	2.0	(1.0 to 3.8)
Both factors	3.3	(1.3 to 8.4)
Low coworker support (yes vs no)	2.0	(1.1 to 3.9)

[†]RPE Borg scale ≥15.



Risk factors for incident RCS in women

Variable	OR	95% CI
Age		
<40	1	
40-44	3.0	(1.2 to 7.4)
45-49	3.4	(1.4 to 8.0)
≥50	5.5	(2.3 to 13.2)
Work with temporary workers (yes vs no)	2.2	(1.2 to 4.2)
Arm abduction (60° to 90°) (yes vs no)	2.6	(1.4 to 5.0)



Discussion

■ Positive points

- Large working population
- RCS clinically diagnosed by trained OPs

■ Limitations

- Exposure data self-reported: some misclassification ?
- Extra-occupational physical activities and individual psychological factors (anxiety, depression, traumatic life events, etc) not assessed

Conclusion

■ Main results

- Different risk factors according to gender
 - **Arm abduction** was the major work-related risk factor
 - Psychosocial factor only for men
 - Effect of age
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- Mechanical and psychosocial exposure should be an important target for strategies for the **prevention** of RCS in the working population
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- Bodin J, Ha C, Petit Le Manac'h A, Sérazin C, Descatha A, Leclerc A, Goldberg M, Roquelaure Y. Risk factors for incidence of rotator cuff syndrome in a large working population. Scand J Work Environ Health. 2012 [Epub ahead of print]

**Thank you for your
attention**