Cumulative low back load as a risk factor for low back pain

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Background – physical risk factors LBP

- Inconsistent knowledge:
  - forward bending
  - lifting
- Mechanical load (moments/forces) more reliable?

Aims

Investigate:

- Effect of mechanical load on LBP prevalence
- Predictive value of mechanical load compared to other risk factors (e.g. lifting, bending)

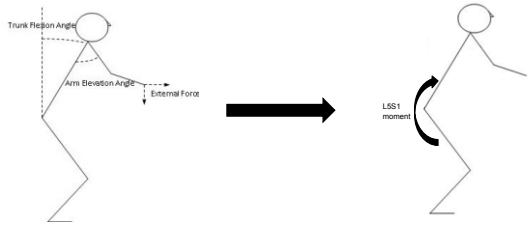
Methods (1)

- Workers of 34 companies in the Netherlands
- 1747 workers were included
- Work load assessment (video observations at workplace)
- 3 year follow-up (self-reported LBP)

Methods (2) – assessment of back load

- Systematic (video) observations of:
  - Trunk flexion
  - Trunk rotation
  - Arm elevation
  - External load
  - Lifting

Methods (3) – assessment of back load



Biomechanical model using observation data cumulative L5S1 moment

Methods (4) - statistics

- Logistic regression model
  - Independent variable:
    - Cumulative load
    - Lifting and bending
    - Cumulative load and lifting and bending
  - Dependent variable: LBP
- Calculate ORs to assess predictive value

Results (1) - descriptives

- Data available for 1196 workers
- Age 35±9 years, 30% female
- 616 (52%) workers with LBP during follow-up

Results (2) – adjusted risk factors

Risk factor	OR (95% confidence interval), separate analyses
Cumulative low back load	**1.17 (1.07-1.28)**
Time in a bended position	**2.35 (1.46-3.79)**
Lifting	**2.22 (1.33-3.72)**
Lifting loads >25 kg	**2.38 (1.48-3.82)**

Discussion

Significant results suggest:
- Mechanical load predicts LBP

Significance remains when combining risk factors:
- Mechanical load is superior to earlier found risk factors (e.g. bending and lifting), but not to heavy lifting

Conclusion

- Cumulative loading at work increases risk of in LBP
- Prevention should aim on:
  - Postures
  - Duration of exposure
  - Heavy Loads

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