From systematic review to practice (SR2P)

Jos Verbeek, Cochrane Occupational Safety and Health Review Group, the Editorial Team and dozens of Cochrane Review Authors

Cochrane Collaboration

• Occupational Safety and Health Review Group
  • One of a global network of 90 groups, 31 000 volunteers
  • Editorial Base in Kuopio, Finland
    • Jani Ruotsalainen, Kaisa Neuvonen, Leena Isotalo, Jos Verbeek
  • Responsible for the publishing of OSH Reviews (126)
  • No central funding for reviews

• Recent Systematic Reviews
  • OSH enforcement tools for preventing occupational injuries
  • Interventions for work-related complaints of neck, arm and shoulder
  • Vocational training for workers with traumatic upper-limb disorders
  • Interventions to prevent infestation in contacts of people with scabies

• OSH Review Group at FIOH
  • osh.cochrane.org
Systematic Reviews

- How do the results of research find their way into practice?
  - One study does not make summer
  - Replication research needed
  - Research synthesis needed: Systematic Reviews
  - Systematic Reviews should underpin practice and not single studies

SR2P

- Push
  Evidence-based...
  - ....guidelines
  - ....training and education
  - ......OSH Law and OSH policy (Ministry)
  - ......Social Partners (Unions, Employers)
  - ......University Incentives
- Pull
  Occupational Health Services...
  - ..evidence-based
  - ..guideline based
  - ..high professional standards
  - ..beneficial review results
NEEDLE STICK INJURY PREVENTION
PUSH AND PULL

How to prevent needle stick injuries

- Safe devices
- Education and training
- (Double) gloving
- Safe work practices
- Blunt or taper needles
Blunt needles to prevent needle stick injuries

- Blunt needles effectively reduce the risk of needle stick injuries in surgeons with 54% 

Parantainen 2011

Double Gloves vs Single Gloves for needle stick injuries

Mischke 2014
Safe devices (n=17)

- 6 RCTs, 4 CBAs, 7 Time-series

- Safe blood collection systems (n=1)
  - very low quality evidence in one study that these decrease needle stick injuries.

- For intravenous systems (n=9)
  - very low quality evidence that they result in a decrease of NSI compared with usual devices but moderate quality evidence that they increase contamination with blood.

- For safe injection systems, multiple safety devices or the introduction of sharps containers (n=7)
  - the evidence was inconsistent or the results were not statistically significant.

PUSH OF EU DIRECTIVE ON SHARP INJURIES PREVENTION
EU directive sharps prevention

• HAS ADOPTED THIS DIRECTIVE:
• Article 1
• This Directive implements the Framework Agreement on prevention from sharp injuries in the hospital and healthcare sector signed by the European social partners HOSPEEM and EPSU on 17 July 2009, as set out in the Annex.

Agreement EU social partners, sharps prevention

• General Principles:
  • Safe disposal
  • Ban recapping of needles
  • Training use of safe devices
  • Protective equipment
  • Vaccination if technically possible

• Implementation:
  • 1. Training
  • 2. Safety engineered devices
  • 3. Safe work practices
Pull Push SR2P
Needle Stick Prevention

- No evidence base for EU directive and it misses important interventions
- 2012 FDA/CDC/NIOSH recommendation to use blunt needles based on review
- Who will implement evidence in EU?
  - Social Partners? DG Employment, unit HSH at work?
  - EU Agency for Safety and Health at Work Bilbao?
- Will Occ Health Services implement?
  - Finnish guidance for employees and employers = translation of directive
  - < 50% of surgeons believe that blunt needles help

NOISE INDUCED HEARING LOSS
Interventions to prevent noise-induced hearing loss

- Noise-induced hearing loss top three occupational diseases

- Cochrane Review Verbeek 2012
  - Effectiveness of interventions to prevent noise-induced hearing loss
  - Is a hearing loss prevention programme as effective as not being exposed to noise at all?
  - What is the effect of instruction on the preventive effect of ear plugs?

### Hearing loss 5 y follow-up

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Std. Mean Difference</th>
<th>SE</th>
<th>Total</th>
<th>Weight</th>
<th>IV, Random, 95% CI</th>
<th>Year</th>
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<tbody>
<tr>
<td>Pell 1973</td>
<td>0.02</td>
<td>0.058673</td>
<td>389</td>
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<td>Gosztonyi 1975</td>
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<td>71</td>
<td>97.6%</td>
<td>0.15 [-0.18, 0.48]</td>
<td>1975</td>
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<tr>
<td>Hager 1982</td>
<td>-0.1</td>
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<td>27</td>
<td>2.7%</td>
<td>-0.1 [-0.72, 0.52]</td>
<td>1982</td>
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<td>Lee-Feldstein 1993</td>
<td>0.2913</td>
<td>0.1858</td>
<td>111</td>
<td>7.8%</td>
<td>0.2913 [-0.07, 0.66]</td>
<td>1993</td>
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<td>Total (95% CI)</td>
<td>0.02</td>
<td>0.058673</td>
<td>698</td>
<td>1623</td>
<td>0.02 [-0.09, 0.13]</td>
<td></td>
</tr>
<tr>
<td>Heterogeneity: Tau² = 0.00; Chi² = 2.53, df = 3 (P = 0.47); I² = 0%</td>
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<tr>
<td>Test for overall effect: Z = 0.97 (P = 0.33)</td>
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<td>Test for overall effect: Z = 1.48 (P = 0.14)</td>
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Conclusion: hearing loss prevention programmes are not effective enough.
Effect of instruction for use of earplugs

- Instruction versus user-manual
  - RCT, N=40, USA, Parks 1991
  - **No instruction reduced protection with 50%**
  - Similar results elsewhere Joseph 2007, Murphy 2011, Nelisse 2012

- Conclusion:
  - Ear plugs **do not sufficiently protect** workers exposed to noise
PULL AND PUSH FOR HEARING PROTECTION

ArboNed

Werkgever ▶ Werknemer ▶ Verzekeraar ▶ Branches ▶ Cases ▶ Wetgeving

U bent hier: ArboNed ▶ Gezonde werknemers ▶ Gehoorzorgprogramma

Gehoorschade voorkomen

Gehoorschade, ofwel lauwaaidichthorendheid, is al jaren de meest gemelde beroepsziekte. Dagelijks worden zo’n 900.000 werknemers blootgesteld aan schadelijk geluid. Deze aandoening kan niet worden genezen, maar kunt u als werkgever wel voorkomen.

Risicogroepen
Translate into new product

- NIOSH HPD Well-Fit™: The Future is Fit-Testing

Proposed OSHA approach

- "There is sufficient evidence that hearing protection alone cannot prevent workers from suffering preventable hearing loss," said David Michaels assistant US Secretary of Labor for Occupational Safety and Health (Oct 2010)

- The popular assumption has been that hearing protection devices, audiometric testing, and training requirements would be sufficient to prevent hearing loss. They are often inadequate and poorly administered.

- OSHA wants to enforce the noise standard’s requirements for controls above the 90 dB(A) permissible exposure level
Yoga, meditation, ‘mindfulness’… Some of the west’s biggest companies are embracing eastern spirituality as a path that can lead to bigger profits. David Gelles reports
Stress Management in Health Care Workers

- In health care
  - Stress prevalent due to work- and organisation related factors
  - Stress leads to
    - Higher turn over, lack of staff, higher labour costs
    - Burn out, depression

- Cochrane Review Marine / Ruotsalainen:
  - Stress management for preventing and decreasing stress complaints in health care personnel
  - 19 Randomised trials; Current update 58 RCTs

Conclusion:
Stress management reduces complaints with about 13%
Relaxation for stress in health care workers

### 3.2.1 Mental relaxation

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Experimental Mean (SD)</th>
<th>Control Mean (SD)</th>
<th>Std. Mean Difference from Baseline (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohen et al. 2005</td>
<td>15.8 (2.1)</td>
<td>12.2 (3.1)</td>
<td>-0.60 (-1.62, 0.42)</td>
</tr>
<tr>
<td>MacKenzie 2006</td>
<td>20.6 (1.9)</td>
<td>16.7 (2.3)</td>
<td>0.79 (0.40, 1.18)</td>
</tr>
<tr>
<td>Waddell 2002</td>
<td>26.9 (3.9)</td>
<td>22.7 (7.6)</td>
<td>0.77 (0.44, 1.18)</td>
</tr>
<tr>
<td>Orman 2006</td>
<td>17.7 (1.0)</td>
<td>11.3 (3.8)</td>
<td>-0.20 (-0.78, 0.38)</td>
</tr>
<tr>
<td>Shapiro 2005</td>
<td>21.2 (1.4)</td>
<td>16.2 (4.4)</td>
<td>-0.70 (-1.51, 0.10)</td>
</tr>
<tr>
<td>Sartor 1990</td>
<td>18.6 (2.8)</td>
<td>20.5 (2.3)</td>
<td>-0.15 (-0.55, 0.25)</td>
</tr>
<tr>
<td>Heterogeneity: Tau^2 = 0.52, Chi^2 = 24.11, df = 5 (p = 0.0032), I^2 = 79%</td>
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<tr>
<td>Test for overall effect: Z = 1.13 (p = 0.13)</td>
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</table>

### 3.2.2 Physical relaxation

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
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<th>Std. Mean Difference from Baseline (95% CI)</th>
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</thead>
<tbody>
<tr>
<td>Bittman 2003</td>
<td>13.2 (3.4)</td>
<td>12.6 (3.1)</td>
<td>-0.28 (-0.70, 0.14)</td>
</tr>
<tr>
<td>Waddell 2003</td>
<td>4.5 (1.6)</td>
<td>3.6 (2.1)</td>
<td>0.84 (0.52, 1.16)</td>
</tr>
<tr>
<td>Kuyken 2006</td>
<td>6.0 (0.8)</td>
<td>6.8 (0.9)</td>
<td>-0.25 (-0.50, -0.00)</td>
</tr>
<tr>
<td>Kuyken 2012</td>
<td>59.5 (28.8)</td>
<td>35.2 (21.1)</td>
<td>0.58 (0.36, 0.80)</td>
</tr>
<tr>
<td>Falzetti 2012</td>
<td>2.0 (1.4)</td>
<td>1.6 (1.5)</td>
<td>0.41 (0.01, 0.82)</td>
</tr>
<tr>
<td>Vacare 2010</td>
<td>5.6 (0.8)</td>
<td>5.1 (0.6)</td>
<td>0.57 (0.35, 0.80)</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>174 (55.7)</td>
<td>142 (55.7)</td>
<td>-0.47 (-0.70, -0.24)</td>
</tr>
<tr>
<td>Heterogeneity: Tau^2 = 0.00, Chi^2 = 1.52, df = 5 (p = 0.90), I^2 = 0%</td>
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<td>Test for overall effect: Z = 2.02 (p = 0.000)</td>
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</table>

Total (95% CI): 277 (100.0%)

Test for overall effect: Z = 2.78 (p = 0.000)

Favours: experimental > favours: control

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ArboNed

Leefstijlprogramma's

Leefstijlprogramma's verbeteren uw werkomens gezondheid. Met de leefstijlprogramma's kunnen leefstijlen verbeterd worden. Zie pakken voor meer informatie.

---

contact

Leefstijlprogramma's

Een gezonde leefstijl

Leefstijlprogramma's

Hoge

leefstijl

contact

Leefstijlprogramma's

Testimonials

ArboNed Testimonials

Laat een commentaar achter
Conclusion

• More, and more focused, push and pull needed to get evidence into practice

• University/Government: create push
  • Guidelines, Products, Services

• Occupational Health Services: create pull
  • Advertise and use evidence-based services and guidelines

• Get employers and unions involved in EBM