Ergonomics in Education – A whole school approach for pupils, staff & volunteers

Why, How & Practical Solutions

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Osmond Ergonomics Webinar
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Learning Objectives

1. To gain an understanding of current research and implications of **ergonomics in education**.

2. To gain a broader understanding of the **key risk factors** affecting staff and pupils within schools and early years settings.

3. To gain an understanding of **injury prevention methods** available.

4. To be able to apply practical, workable **back care solutions** within school and nursery settings and be aware of the importance a **Back Care Policy**.
Statistics and Research

Adults / Education Staff

• Back pain peaks in adults 35-55 years old (Burton et al 2006).
• Musculoskeletal problems found to be the leading cause of ill-health retirement in Irish school teachers affecting 10% of teachers (Maguire and O’Connell 2007).
• Prevalence of low back pain 40-45% in nursery and primary school teachers (Pillastrini et al 2009, Hashim & Samad et al 2010). Main contributing factors: Lifting load (28%), prolonged sitting (25%) (Hashim and Samad et al 2010).
Statistics and Research

• Low back pain, neck and shoulder pain in the top 10 most frequently reported health complaints amongst teachers (Chong & Chan 2010).

• Evidence of knee Osteoarthritis from prolonged kneeling and squatting (Coggan et al 2000, Klussmann et al 2010).

• Anecdotal evidence.

• Latest Research “Work-related musculo-skeletal discomfort in UK early years and primary teaching professionals”. Can be found at www.jollyback.com
“Work-related musculo-skeletal discomfort in UK early years and primary teaching professionals” (705 responses).

Career prevalence 98%, back pain 88%, Neck and shoulder pain 73%, knee pain 56%, Other hips, ankles, feet, arms, wrists...multiple joints?

How often was it experienced? 82% once a week or more (36% everyday, 32% more than once a week, 14% once a week). 38% had been off work because of it.

How many had received treatment? 70%

How many had recorded it? 8%, 48% visited GP. Why not? 77% Accepted as part of the job, 67% don’t wish to complain, 37% fear of jeopardising career.
Statistics and Research

• **Children and Young People / Pupils**

  - Studies over the last decade show 13-50% of 11-17 year olds have experienced back pain. Incidence & severity is increasing. (cited Gardner & Kelly 2006, Vaughan et al 2007).

  - Recurrent or chronic back pain (lasting > 3 months) in 8% of young people under 17 years (Jones et al 2004).

  - Degenerative disc changes present on MRI in 90% of 14-23 year olds with recurrent back pain (Salminen et al 1999).

  - Pupils who experience back pain are more likely to experience it as an adult (Salminen et al 1999, Croft et al 2001, Jones & Macfarlane 2009).
Research Answers

- Which work activities caused/contributed to it?
  91% bending over low tables (85% Pre-school)
  85% sitting on children’s chairs (86% Pre-school)
  71% kneeling at low tables/on the floor
  68% moving equipment (76% Pre-school)
  60% sitting on the floor
  58% washing up in low sinks
  OTHER: lifting children, nappy changes, putting up displays, restraining children...
Risk Factors

• Having a previous episode of back pain (BackCare 2009, Jones & Macfarlane 2009)

• **Physical Factors** which may contribute: frequent bending, twisting, lifting, pulling and pushing, repetitive work, static postures (Anderson 1997)

• In addition: sitting at a workstation for a long period of time if the workstation is not correctly arranged or adjusted to fit the person, stooping, bending over or crouching (poor posture), stretching, twisting, reaching (HSE online “Causes of Back Pain” 2010).

[www.hse.gov.uk/msd](http://www.hse.gov.uk/msd)
Risk Factors

• Awkward or uncomfortable positions - e.g. Working with arms away from your body, or with your back bent and twisted, poor lifting and handling technique (Chartered Society of Physiotherapy 2010).

Functional Anatomy can Explain Why Injury and cumulative strain occur

1. Spine provides strength and flexibility – contradictory functions so already at increased risk of injury. Also protects nervous tissue.

2. Discs – shock absorbing - 88% water, can bulge and compress nerves – hydration essential.
Risk Factors

3. **Ligaments** – inelastic - bone to bone – limit movement, poor blood supply. Susceptible to cumulative strain (toxin build up).

4. **Tendons** – inelastic - muscle to bone. Poor blood supply and quickly adapt to shortening.

5. **Muscles** – allow upright posture, stabilize trunk, provide movement, pump blood around body. Highly elastic and contractile. Liable to fatigue from overuse, can overload with insufficient recovery time and experience cumulative strain from static postures.
Risk Factors

**Flexed Spine Postures - damaging**

Spine in a flexed “C” position rather than a healthy upright “S” shape (when viewed from the side). Also occurs in sitting with knees higher than hips.

“When used repeatedly or sustained for any length of time, top heavy movements produce a gradual loss of normal elasticity of body tissues, making the individual more prone to fatigue, cumulative strain and/or permanent damage/injury” (APCP 2010).

Staff are in a daily, continuous “at risk situation” - working at low heights due to the very nature of their low level work with babies and young children pain.
Risk Factors

• **Other Factors** which may contribute to back pain: obesity, smoking, fatigue, stress and anxiety, family history, less than 2 hours a week exercise or more than 30 hours at an elite level (cited in Gardner & Kelly 2006).

• Pupil carrying load limit greater than 15% of their body weight (BackCare 2008). Aim for 10%.

• Lack of space in classrooms – for movement and equipment storage (both for pupils and staff).

• Lack of time for staff rest breaks.

• 25000 hours spent sitting on children’s furniture in a teacher’s 30 year career.
Implications

Adults / Education Staff

- Socio-economic consequences for individuals and families.
- Back pain is second most common cause of absence from work in GB with over 4 million working days lost each year (BackCare 2009).

Children and Young People / Pupils

- School absence, loss of physical activity/sports (Jones et al 2004).
- Can Jeopardise career choice.
- National Healthy Schools Programme 2006 : 4 themes (PSHE, Emotional Health and wellbeing, Physical Activity and Healthy Eating.)
Implications

- *Every Child Matters: Change for Children (Dept of Health 2004).* Aim for every child to: be healthy, stay safe, enjoy & achieve, make a positive contribution, achieve economic well-being.


- **Legislation** – Occupational health and safety is enforced by HSE. If Law breached, possible criminal prosecution. If duty of care breached, possible civil claim (includes staff and volunteers – but not yet pupils).
Implications

• *Health and Safety at Work Act 1974.*
• *Manual Handling Operations Regulations 1992 (Updated 1999).*
• *Management of Health and Safety at Work Regulations 1999*
• *Workplace (Health, Safety and Welfare) Regulations 1992*
• *Reporting of Injuries, Disease and Dangerous Occurrences Act 1995 (RIDDOR)*
Implications

- **School**
- Supply staff £100-£203 per day.
- Increased workload for remaining staff.
- Disruption for pupils and parents
- Low morale.
Injury Prevention Methods

1. Be aware of legislation and essential need for reporting. TELL YOUR MANAGER if you feel you are experiencing a work related MSD.

2. Record any incident and “cumulative strain end point” in your organisation’s ACCIDENT BOOK – with comments if necessary.

3. Raise awareness amongst staff - safer, more efficient movement, not “top heavy”. Help each other!

4. Organise/attend training on manual handling, posture and healthy ergonomics related to your workplace.

5. Risk assessment (Assess, Record, Control, Reduce, Review)

6. Whole –school approach “Healthy Backs School Education Programme – for pupils and staff” (Derby)
Practical Solutions

- Principles of safer moving and handling
- School trips
- Transporting admin/books etc
- Moving outdoor equipment in and out of storage
- Washing up in low sinks
- Moving the outdoor play / PE equipment, the piano
- Jolly Back and other equipment to improve adult posture and ergonomics
- Classroom set up for staff and pupils
- Standard Operating Procedures – Back Care Policy
Future Developments

• Further research into work-related musculoskeletal discomfort in education staff - HSE

• Liaison with teaching unions – [www.voicetheunion.org.uk](http://www.voicetheunion.org.uk) and NUT

• Back Care on the curriculum – for pupils and student teachers? Successful other programmes: 5 a day, sun awareness, Change 4 Life etc.

• Help now:

  Jolly Back products – Chair, Table, PosturePad, training DVD & consultancy

  BackCare – the Charity for Healthier Backs [www.backcare.org.uk](http://www.backcare.org.uk)
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Discussion & Questions

Any questions or ideas?

Thank you for listening!
References


BackCare (2008). Protecting Young Backs – school survival kit

BackCare (2009). Key facts on back pain at work for employers

References


Chartered Society of physiotherapy (2010). Fit for Active Work – Top Tips Leaflet

References


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