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Ergonomics in Early Childhood
Strategies for Childcare Workers

Sara Loesche, MS, OTR/L, CHT
November 15, 2018

Learning Outcomes
After this course, participants will be able to:

- Describe the relationship between ergonomics and the job of a childcare worker.
- Outline ergonomic risk factors that may occur during childcare related tasks and lead to musculoskeletal injury.
- List several strategies to promote wellness in childcare related tasks within the person, task, and/or environment.
What is ... Ergonomics

Occupational Therapy

and what is the connection to childcare workers?
Occupational Therapy

- Help people across the lifespan to do the meaningful every day activities that they want and need to do by looking at the balance of P, E, & O

OT’s Role in Ergonomics

- Return to work after an injury or illness or in the presence of disability
- Health promotion – assessments and interventions to optimize function
- Injury prevention education
- Consulting with employers and/or insurance companies to keep workers’ compensation costs low

Support the worker and promote workplace wellness
Musculoskeletal Disorder

**AKA**
- Cumulative Trauma Disorder
- Repetitive Stress Disorder/Injury
- Overuse Syndrome

- Repetitive motion during a task
- Sustained position over time
- Forceful movement
- Awkward postures/positions
- Pressure points (contact stress)

CDIR, 1999; Lunsford, n.d.

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**Childcare Worker Overview**

1 million women

Low control

Low wages

Job demands

Long hours

Linnan, Arandia, Bateman, Vaughn, Smith & Ward, 2017
There is more being done about the impact of care on the child than the impact the job has on the childcare provider.

Closer Look at Childcare Workers

- Variation in where childcare workers are found
  - Creates a gap in health and safety controls
- A ‘dangerous’ profession?
- Hold multiple roles
- Stress
- Environmental exposure
Health & Safety Risks of Childcare Workers

- Infectious Diseases
- Musculoskeletal Injury
- Occupational Stress

Reported Areas of Complaint

<table>
<thead>
<tr>
<th>Area</th>
<th>% Reporting Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Back</td>
<td>44</td>
</tr>
<tr>
<td>Neck</td>
<td>18</td>
</tr>
<tr>
<td>Shoulder</td>
<td>11</td>
</tr>
<tr>
<td>Knee</td>
<td>9</td>
</tr>
<tr>
<td>Elbow</td>
<td>7</td>
</tr>
<tr>
<td>Wrist</td>
<td>6</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
</tr>
<tr>
<td>NONE</td>
<td>1</td>
</tr>
</tbody>
</table>

Caroline, Vinod, Dr. Arun, 2014

McGrath, 2007
TREATMENT

- Medical intervention
- Therapy (Physical & Occupational)
- Complimentary & Alternative Medicine
  - Acupuncture
  - Yoga
  - Mindfulness
- **NO TREATMENT**

Caroline, Vinod, Dr. Arun, 2014

Hazard Identification Checklist

<table>
<thead>
<tr>
<th>Externally paced activities</th>
<th>Perform activities above shoulder height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exert force with hands (push/pull/pinch)</td>
<td>Perform activities that bend/twist at waist</td>
</tr>
<tr>
<td>Stand continuously for &gt; 30 minutes</td>
<td>Lift/lower objects waist to floor</td>
</tr>
<tr>
<td>Sit continuously for &gt; 30 minutes</td>
<td>Lift/lower objects waist to shoulder</td>
</tr>
<tr>
<td>Use electronic devices for &gt; 30 minutes</td>
<td>Lift/lower objects &gt; than once/min. (&gt;15')</td>
</tr>
<tr>
<td>Kneel (one or both knees)</td>
<td>Lift, lower, carry objects not close to body</td>
</tr>
<tr>
<td>Lift, lower, carry objects &gt; 50 pounds</td>
<td>Use hand tools or handle parts/objects</td>
</tr>
</tbody>
</table>

Adapted from CDC/NIOSH at https://www.cdc.gov/niosh/topics/ergonomics/ergoprimer/pdfs/WMSD-Hazard-Identification-Checklist.pdf
Task Analysis Checklist

* Does the task eliminate ...
  - Bend/twist back
  - Crouch
  - Bend/twist wrist
  - Extend arms
  - Raise elbows
  - Fingertip pinch
  - Static muscle load
  - Clothes wringing motion

* Are your materials ...
  - Able to be held without slipping
  - Easy to grasp
  - Free from sharp edges or corners
  - Proper size for worker

* Are repetitive motions ...
  - Minimized by job rotation
  - Able to be self-paced
  - Broken up by rest breaks

* Answer of ‘no’ indicates potential problem area

Adapted from CDC/NIOSH at https://www.cdc.gov/niosh/topics/ergonomics/ergoprimer/pdfs/Task-Analysis-Checklist.pdf

Top Areas of Concern

- Lifting
  - Changing tables, cribs, strollers, high chairs, floor

- Physical endurance
  - Being “vigilant and continuously responsive”

- Small furniture
- Bending / Stooping
- Unsupported sitting

King, Gratz & Kleiner, 2006
How OT Can Help

- Look at performing tasks/routines
  - Frequency & duration of tasks
  - Rotation of tasks
- Body movements
  - Body mechanics education
  - Stretching
- Environmental modification/ equipment used
  - Furniture
  - Environmental set up

Strategies: PERSON

- Vary posture throughout the day
- Learn & use proper body mechanics for lifting, squatting, bending, stooping*
- Take stretch breaks
- Think about your overall strength & fitness

King, Gratz & Kleiner, 2006
Strategies: ENVIRONMENT

- Sit/kneel chairs, other seating options
- Adult sized furniture options
- Steps or step stools
  - Lifting option to pick up children
  - Avoid awkward reaching/postures
  - Help children get on/off toilet, wash hands, etc.
- Use a cart to transport (garbage, supplies, etc.)
- Reorganize frequently used items to simplify (snack prep, crafts, activities, etc.)
- Heaviest items should be at waist height in classroom, kitchen, playground, etc.

King, Gratz & Kleiner, 2006
Strategies: TASK (Occupation)

- Rotate through jobs throughout the day
- Encourage independence when you can
- Use 2 workers when you need to (lift)
- Reduce size or weight of load
- During floor time, sit against a wall or furniture for back support (when possible)

POSTURE

Watch your back!

... and neck
...and shoulders
...and wrists
... and knees
Low Back

- There are ‘normal’ curves in your back
- These curves MUST be maintained (especially the lumbar or low back)
- DO bend at your hips (and knees)
- DO NOT bend at your waist

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Example: Picking object up
Example: Floor play

Disk Pressure through Spine

- Supine (laying face up)  \(\text{LEAST}\)
- Side-lying
- Standing
- Seated
- Standing – bend forward at hips
- Seated – bend forward at hips
- Standing – bend w weight
- Seated – bend w weight  \(\text{GREATEST}\)
Neck & Shoulders

- Head and neck in ‘midline’ and not bent forward
- Shoulders relaxed and away from your ears (neither elevated or depressed)
- Shoulder blades (scapula) level and slightly retracted (pulled together)

Wrist & Thumb

- Keep wrists ‘neutral’ (not bent or extended)
- Avoid the ‘L’ of your thumb – keep it ‘tucked in’
- Loosen your grip
- Keep the child’s weight on larger joints (forearms, palms) and away from fingers/thumb
Lifting Guidelines

- Be close to the object you are moving
- Face the object head on
- Bend your knees – use your legs, not back
- Keep a neutral spine (maintain normal curves)
- Keep a wide base of support
- Keep your heels down
- Avoid combining movements
  - Rotating + bending forward or backwards

General Stretches

- Low back – Lying on back, bring knees into chest
- Shoulders – Shrug up/down; shoulder rolls
- Upper back – Pull shoulder blades together, apart
- Neck – Look up/down, left/right, ear to shoulder, pull chin back and push forward
- Wrists – Wrist flexors (prayer stretch); Wrist extensors (tennis elbow stretch)
- Cat stretch – On all fours, arch back like a cat
Summary:
Start with one change

Questions?

Please ask!

Thank you!
Sara Loesche, MS, OTR/L, CHT
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References


References (continued)