Corporate Ergonomics
Neutral Joint Positions – Hands / Arms / Shoulders
Evaluation of Joint Positions
Evaluation of Joint Positions
Positions: Hands / Arms / Shoulders
Definition of colors:

**Green**: Optimal. This posture is allowed to be adopted for a long time.

**Yellow**: Still acceptable body posture. This posture is only allowed to be adopted for a short period of time or to perform work-tasks with low frequencies.

**Red**: Extremely awkward body posture. Has to be avoided!
## Shoulder Joint
### Adduction / Abduction

<table>
<thead>
<tr>
<th>Shoulder Joint</th>
<th>Neutral (natural) Body Posture</th>
<th>Awkward Body Posture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source: German BGIA-Report 2/2007, Acc. To DIN EN 1005-4; German A 55</td>
<td>Optimal</td>
<td>Still acceptable posture</td>
</tr>
</tbody>
</table>

- **To the body = Adduction**
  - + 0°
  - > 0°

- **From the body = Abduction**
  - - 0° to -20°
  - -20° to -60°
  - < -60°

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**ABDUKTION**  **ADDUKTION**
# Shoulder Joint Flexion / Extension

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**Forwards (Flexion)**
- +
  - 0°-20°
- 20°-60°
  - > 60°

**Backwards (Extension)**
- -
  - < 0°
## Shoulder Joint

### Pronation / Supination

<table>
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<th>Neutral (natural) Body Posture</th>
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**Pronation (to the body)**

- **+** 0°-30°
- **30°-60°**
- **> 60°**

**Supination (from the body)**

- **-** 0° to -15°
- **-15° to -30°**
- **> -30°**

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**Note:**

- Pronation: Rotation towards the body
- Supination: Rotation away from the body
# Cubital Joint

## Flexion / Extension

<table>
<thead>
<tr>
<th>Cubital Joint</th>
<th>Neutral (natural) Body Posture</th>
<th>Awkward Body Posture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source: German BGIA-Report 2/2007 Acc. To DIN EN 1005-4; German A 55</td>
<td>Optimal</td>
<td>Still acceptable posture</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Extremely awkward posture</td>
</tr>
</tbody>
</table>

### Flexion

- **Optimal:** 60°-100°
- **> 100°**

### Extension

- **Optimal:** 60°-100°
- **< 60°**
## Lower Arm

### Pronation / Supination

<table>
<thead>
<tr>
<th>Lower Arm</th>
<th>Neutral (natural) Body Posture</th>
<th>Awkward Body Posture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source: German BGIA-Report 2/2007 German A 55</td>
<td>Optimal</td>
<td>Still acceptable posture</td>
</tr>
</tbody>
</table>

### Pronation
- **0° to 20°**
- **20° to 40°**
- **> 40°**

### Supination
- **0° to -30°**
- **-30° to -55°**
- **> -55°**

![Diagram of Pronation and Supination angles](image)
## Wrist Flexion / Extension

<table>
<thead>
<tr>
<th>Wrist</th>
<th>Neutral (natural) Body Posture</th>
<th>Awkward Body Posture</th>
</tr>
</thead>
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<td>Source: German BGIA-Report 2/2007 / German A 55</td>
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</table>

### Extension
- 0° to -25°
- -25° to -50°
- > -50°

### Flexion
- 0° - 20°
- 20° - 45°
- > 45°
## Wrist

### Radial Abduction / Ulnar Abduction

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Source: German BGIA-Report 2/2007
German A 55

#### Radial Abduction

<table>
<thead>
<tr>
<th>+</th>
<th>0°-10°</th>
<th>10°-15°</th>
<th>&gt; 15°</th>
</tr>
</thead>
</table>

#### Ulnar Abduction

<table>
<thead>
<tr>
<th>-</th>
<th>0° to -10°</th>
<th>-10° to -25°</th>
<th>&lt; -25°</th>
</tr>
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