



## Ergonomic hazards - examples of musculoskeletal injuries (MSIs)

| Body part          | MSI                     | Description  | Symptoms   | Activity/symptom link  |
|--------------------|-------------------------|--|--|--|
| Arms               | Epicondylitis           | "tennis elbow" affects the tendons on the lateral/outside of the elbow; "golfer's elbow" affects those on the medial/in side | pain, weakness, swelling, burning sensation or dull ache from elbow sometimes to wrist, when picking up things with wrist bent | repeated bending or straightening of the elbow from its neutral position (a right angle); twisting wrist and forearm<br><i>lateral</i> : hammering, lifting with out-stretched fingers, bending wrist against force<br><i>medial</i> : rotating forearm and bending wrist at the same time |
| Back               | Back pain               | pain anywhere in the back; often in the lower back, below the waist  | tenderness, stiffness or fatigue which may be linked to disc, vertebrae, ligament, muscle, spinal cord or nerve problems       | lifting, carrying, pushing, pulling, sitting or standing all day, walking on hard surfaces, etc.   |
| Feet               | Achilles tendonitis     | inflammation of the tendon connecting the heel bone to calf muscles in the back of the leg                                   | pain at the heel and lower back leg, difficulty walking, ankle's not flexible  | inflexible shoes, going from high heels to flat shoes/ runners   |
|                    | Ganglion                | a mass forms when tissues around certain joints gets inflamed and swells with fluid  | hard "bump" under the skin, usually on top of foot   | tight footwear   |
| Knees              | Bursitis                | "housemaid's knee", "carpetlayer's knee"   | pain and swelling  | working on or with knee often using force  |
| Neck and shoulders | Biceps tendonitis       | pain where the biceps tendon meets the shoulder joint  | pain when raising arms, lifting, pulling   | slumped posture, moving arm across desk that's too high/far away   |
|                    | Bursitis                | bursa inflamed   | pain, perhaps restricted movement  | work with arms above shoulders   |
|                    | Rotator cuff tendonitis | inflammation of one or more shoulder tendons   | pain, weakness, swelling, burning sensation or dull ache when reaching   | arms raised away from the sides, usually also rotating the arm from the shoulder   |



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|---------------------------------------|---|---|---|---|
| <b>Neck and shoulders</b><br>(cont'd) | Tension neck syndrome                         | involves neck muscles   | pain in neck and shoulder area, guarding muscles, limited range of neck motion  | stress, computer work, assembly line work, holding neck in one (static) position  |
|                                       | Thoracic outlet syndrome                      | the neck and shoulder nerves and blood vessels are compressed/squashed  | pain, numbness, swelling of the hands, weakness from forearm down, cold   | prolonged shoulder flexion, overhead work, carrying heavy loads on the shoulder or with arms at the side                                  |
| <b>Wrist and hands</b>                | Carpal tunnel syndrome                        | the median nerve going through the wrist bones is squeezed by inflamed tendons and then by inflamed tendon sheaths/covers | tingling, numbness (thumb and first 2 or 3 fingers), burning, pain (that may wake you up), wasting of muscles at base of thumb, dry palm, can't grasp         | bending and straightening wrist repeatedly and rapidly, especially flexion – moving the wrist (up) towards the body – combined with force |
|                                       | DeQuervain's disease/syndrome                 | tendon and its sheath at base of thumb are inflamed   | pain, weakness at base of the thumb, side of the wrist and sometimes index finger, especially when doing something like turning a beer cap or wringing things | using pinch grip - thumb and forefinger - especially with force (e.g. grabbing file folders)  |
|                                       | Dupuytren's contracture                       | ring (and then middle and little) fingers pulled towards palm   | thickened palm or nodule on finger tendon   | often inherited but aggravated by typing and other repeated small movements of the palm of the hand                                       |
|                                       | Extensor tendonitis                           | tendons of muscles that straighten/bend fingers affected  | pain on top of hand near the wrist  | holding hands in "stop traffic" position  |
|                                       | Ganglion                                      | see above   | aches and weakness; bump under the skin   | precise, repetitive hand movements  |
|                                       | Trigger finger                                | tendonitis/tenosynovitis of fingers, also called flexor tendonitis  | pain, fingers locked in bent position   | pinch grip, pulling tool trigger repeatedly, especially with bent wrist   |
|                                       | Vibration white hand/Raynaud's/"white finger" | hand and finger blood vessels are constricted (made smaller)  | fingers turn white and numb, can't hold things, do up zippers   | vibration, aggravated by smoking and some drugs that constrict blood vessels  |

