



REPETITIVE STRESS INJURIES

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Repetitive stress injury (RSI) is a term that most of us are familiar with and may associate with tasks such as typing and conditions including carpal tunnel syndrome. In 1700, an Italian physician first described this condition which he noted in industrial workers. Modern causes include manual labor, office work and any repetitive use of a device. In the field of assistive technology, RSI can also be a concern, primarily in clients who self-propel a manual wheelchair.

DEFINITION

“RSIs are conditions associated with repetitive tasks, forceful exertions, vibrations, mechanical compression and sustained or awkward positions” (Newman, 2015). RSIs may be referred to as repetitive strain injuries, repetitive motion injuries or disorder, cumulative trauma disorder, occupational overuse syndrome and regional musculoskeletal disorder. RSI causes and resultant symptoms vary widely.

PATHOLOGY

Contributing factors of RSI include overuse, poor posture during an activity, sustained postures, vibration, cold, pressure, force, carrying heavy loads and fatigue.

Symptoms of RSI may include tenderness and pain in the affected muscles and joints, throbbing or tingling in the affected area, and loss of sensation and strength. Specific signs may include:

- Swelling, inflammation, or edema (fluid build-up)
- Tendinosis (degeneration of collagen in tendons)
- Damage to tendons or muscles
- Nerve compression or entrapment
- Collapse of blood vessels in the extremities when cold or stressed
- Thickening of deep tissue

Many RSIs are specifically named due to their prevalence. Common examples are cubital tunnel syndrome, DeQuervain syndrome, thoracic outlet syndrome, intersection syndrome, Dupuytren’s contracture, rotator cuff syndrome, medial (golfer’s elbow) or lateral (tennis elbow) epicondylitis, stenosing tenosynovitis (trigger finger), carpal tunnel syndrome and radial tunnel syndrome.

TREATMENT

Treatment for RSIs varies by area of involvement, but may include medications such as anti-inflammatories, muscle relaxants and pain relievers. Steroid injections may be used if inflammation is present. Heat or cold, as well as physical or occupational therapy, may also be recommended. Finally, surgery may be indicated.

A primary component of treatment is prevention. Prevention may stop the progression of an existing RSI by avoiding or modifying a task. Prevention also can be used to identify high risk scenarios to avoid development of an initial RSI.

If an injury is moderate to severe and has not responded well to treatment, the task causing the RSI may need to be avoided. In the area of manual wheelchair self-propulsion, this client may need to use a power wheelchair for independent mobility. If an injury is mild or has responded well to treatment, the task may only need to be modified. In general, task modification includes improving overall ergonomics, posture, varying the task to limit repetition, and taking breaks from the task. In self-propulsion, it is critical to ensure optimal client position, manual wheelchair configuration and propulsion technique. In this issue of DIRECTIONS, our Rehab Case Study and Clinical Corner articles address this issue.

RSIs can occur during use of other assistive technologies. Clients using chin joysticks are at risk of cervical or jaw RSIs. Clients using smartphones, tablets and computers are at the same risk as anyone using repetitive, small movements on a keyboard, depending on how the client is accessing this technology. Even voice input can lead to RSI of the vocal cords. Just as we need to keep pressure in mind when evaluating a client for seating, repetitive stress injuries are an important issue to keep in mind when analyzing a task.

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