

Overuse Injury in Musicians

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Overuse injury refers to any type of breakdown of tissues (muscle, tendon, ligament)

Physical Manifestations

- Pain
- Loss of range of motion
- Loss of endurance
- Loss of fine motor control

Psychological Effects

- anxiety about potential for relief and for full recovery
- questions about continued long-term ability to perform at required levels
- loss of connection with music performance as a primary expressive outlet
- potential loss of status, role, income
- if sufficiently severe, loss of career, challenge of learning a new means of livelihood

The term includes injury:

1. resulting from prolonged repetitive movements
2. resulting from static loading or stationary load bearing

Example of injury from static loading: a bass trombonist fulfills several conditions for overuse injury from continuous static loading.

- Instrument is held and balanced in one hand
- Hand maintains an out-of-alignment position
- Instrument has become steadily heavier over centuries

An excellent example of bad ergonomic fit between human and tool. Now add performance stress, which generates arousal in the muscle tone of the entire body, contributing to fatigue and added strain.

FACTORS CONTRIBUTING TO OVERUSE INJURY: INTRINSIC

Variations in human physiology; size shape. Potential for poor fit between player and instrument.

Variable genetic disposition in terms of potential for achieving levels of coordination and quickness of reflexes that musical performance demands.

Potential for weakness or predisposition to injury in particular areas of physiology; vulnerability is a mix of factors, with individual variations in individual levels and potentials of endurance, strength, and general health.

It has been remarked that in the Olympic competitions we see roughly 15% of all possible body types. There is a ruthless self-selection process in sports at that level. But although musicians must perform at standards close to those demanded of Olympic competitors, far more varieties of physiological types perform on, and compete on, the same instruments.

One problem is that most instruments come as one-size-fits-all, particularly for the winds, which means that some physical types are at a disadvantage in their efforts to fit themselves comfortably to any particular instrument; lack of a "natural" fit can interfere with a musicians' ability to perform to their highest potential.

String teachers help beginners starting out on instruments sized appropriately to the student's growth and age. One observer has remarked that beginning flute students would do well to be given smaller, lighter Eb flutes. There maybe value in bringing influence to bear on manufacturers to introduce smaller-scaled beginner's wind instruments, and value in exploring where customizing instruments to suit individual players may help create better player-instrument fit.

FACTORS CONTRIBUTING TO OVERUSE INJURY; EXTRINSIC

- Environmental; extremes of heat or cold, changes in humidity, issues of air quality.
- Change in repertoire: tackling a work that places new demands physically
- Change in teacher
- Change in equipment
- Increased preparation and/or performance pressure-audition, school juries, solos, etc.
- Overpracticing
- Basic flaws in technical approach
- Postural errors
- Excessive tensions in the body and in the mind
- Stress
- Illness

Seat problems; poor fit, poor ergonomic design Crowding in seating arrangements in ensembles leading to distortions of posture See also, Dr. Robert Holt's list of occupational stressors.

CLASSIFICATION OF INJURY LEVELS

Grade I: pain occurs at the site of overuse only. Pain is modest and disappears after practicing or performing is finished. Adequate rest periods between effort, modest heat therapy, stretching, massage and be effective.

Grade II: pain at multiple sites, pain is more severe. No interference with normal Activities of Daily Living (ADL). Icing, rest, massage, anti-inflammatories, appropriate compensatory stretching, and relaxation skills are effective and relaxation skills are effective and useful, and may alleviate symptoms.

Grade III: Pain exists at multiple sites, pain persists after playing. Some pain accompanying normal ADL. May have loss of facility, some weakness in immediate and associated areas. Primary level of interventions is no longer ineffective (cooling, massage, rest periods).

Grade IV: same as Grade III but all Activities of Daily Life are accompanied by pain, and there is impairment of functioning.

Grade V: loss of capacity to use affected area is secondary to disabling pain. The injured individual cannot use that part of the body when making music or for any other activity.

Grades III, IV, V require consultation with performing arts medicine specialists.

LOCUS OF PAIN

These are statistical breakdowns of the most common locations for pain in musicians

1. Hand and wrist 41%
2. Forearm 11%
3. Elbow area 10%
4. Shoulder 35%
5. Scapular area 7%
6. Neck 38%
7. Thoracic spine 8%
8. Lumbar spine 26%
9. TMJ 1%

* (These statistic's from Norris, R., 1987,and others are primarily drawn from populations of string players and pianists. Little data were being collected at the time of this and other summaries of studies on incidence of embouchure problems in wind players.)

SPECIFICS ON PRINCIPLES OF REHABILITATION

For grades I & II:

- Modification of technique and/or instrument if appropriate
- Reduction, relief of static load where possible
- Graduated return, or increase in playing with frequent rest
- Warm up entire body, as well as injured part prior to playing. Gradual cool down afterwards.
- Anti-inflammatories; helpful in acute overuse injury, less so in chronic overuse condition.
- Biofeedback for general stress reduction and relaxation as well to correct excessive muscle tension in specific muscle groups.
- Stress reduction training

For Grades II, IV and V

- Same as above but may require more extensive rest period away from instrument while maintaining muscle tone in activities that do not exacerbate injured area.
- In all cases, work hardening is a principle that advocates graduated return to a full schedule of practicing and performing over time. This is intended to satisfy two objectives. First, to accommodate muscles moving back to the former levels of challenge and secondly, to provide a monitoring period to observe whether any recurrence of problems occurs, before arriving at the full load levels of demand that could re-damage the system.

PRINCIPLES OF PREVENTION

- Education as to causes of overuse injuries
- Enhanced awareness of early signals of potential overuse injuries
- General overall physical conditioning to increase stamina and strength
- Postural and movement re-education (Yoga, Feldenkrais, Alexander).
- Stress management, relaxation and meditation training to lower overall levels of excessive psychological and physiological arousal levels.
- Systematic balancing of effort and recovery; i.e., practice and performance
- Stretching routines before, during, and after practice and performance
- Customized physical exercises specific to particular instrument and individual.
- Modification where possible of instrument, accessories, and seating.
- Identification and relief of environmental hazards
- Develop a relationship with qualified health professionals in Arts Medicine and
- Performance Psychology as resources for periodic checks to prevent potential problems.
- Education in communication skills to reduce the potential impact of conflictual interactions.
- Finally, as a general principle, development of a long term commitment to establishing and maintaining a balance between investment of self in work, and in the maintenance of one's personal life in all dimensions.