

# **No Pain, No Gain? Overuse Syndromes in String Players**

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# Overuse Syndromes

- Commonly described in occupational and sports medicine literature
- AKA “repetition strain injury” and “cumulative trauma disorder”
- May be defined as injury that occurs when a tissue is stressed beyond its anatomic or physiologic limits
- Concept can be traced back to early 1700s (Ramazzini, Diseases of Workers, 1700, 1713)

DE  
MORBIS ARTIFICUM  
DIATRIBA  
BERNARDINI RAMAZZINI

IN PATAVINO ARCHI-LYCEO

Practicæ Medicinæ Ordinariæ  
Publici Professoris,

ET NATURÆ CURIOSORUM COLLEGÆ.

*Illustriss., & Excellentiss. DD. Eiusdem*

ARCHI-LYCEI  
MODERATORIBUS.

D.



MUTINÆ M. DCC.

Typis Antonii Capponi, Impressoris Episcopalis.  
*Superiorum Consensu.*

# Overuse Syndromes in Musicians

- Hunter J.H. Fry, an Australian plastic surgeon, used the term “overuse” in a series of papers describing pain disorders in symphony orchestra instrumentalists as well as in conservatory and high school music students
- Lederman and Calabrese\* reviewed the subject of overuse, including tissues affected, factors contributing to its development, and management.

*\*Lederman RJ, Calabrese LH. Overuse syndromes in instrumentalists. Med Probl Perform Art 1986;1:7-11.*

# Problems with Term “Overuse”

- Considered pejorative by some, although less so than “misuse” or “abuse.”
- Pathological confirmation of tissue injury in overuse syndromes is sparse
- Lippmann (MPPA, 1991) characterized it as a “simplistic descriptive label” ignoring other possible correctible causes
- Dawson et al (MPPA, 1998) attempted to clarify its use in performing arts medicine, with limited success

# International Conference of Symphony and Opera Musicians

- Surveyed 48 member orchestras
- 2212 instrumentalists responded
- 76% reported a severe problem affecting performance at some time
- 58% (52% males and 70% females) reported musculoskeletal symptoms

Strings 66%

Woodwinds 48%

Brass 32%

Others 60%

*(Middlestadt & Fishbein, MPPA, 1989)*

# String Instrumentalists: Current Series

	M	F		M	F
• Bowed	247	508	• Plucked	141	44
– violin	113	312	– guitar/ banjo	139	15
– viola	55	94	– harp	0	27
– cello	51	90	– other	2	2
– bass	28	12			
Total =	755		Total =	185	

# String Instrumentalists: Career Status

- Bowed

– prof performer	265
– teacher	30
– student	422
– amateur	38

- Plucked

– prof performer	67
– teacher	6
– student	49
– amateur	63

# String Instrumentalists: Musculoskeletal Diagnoses

• Arm/hand pain (regional limb pain)	335
• Neck/ upper trunk pain	80
• Shoulder pain	75
• Ligament/hyperlaxity	61
• Tendinitis (wrist)	47
• Multifocal muscle pain	29
• Epicondylitis	27
• Other	93
<b>Total</b>	<b>747</b>

# Bowed Strings: Side Affected (%)

(Total number = 755)

*Bilateral*

<i>Instrument</i>	R	L	R>	=	<L
Violin	23	60	3	8	6
Viola	26	55	6	6	6
Cello	32	49	4	9	6
Bass	35	55	8	-	3
Total	26	56	4	7	6

# Plucked Strings: Side Affected (%)

## N = 185

<i>Instrument</i>	R	L	<i>Bilateral</i>		
			R>	=	<L
Guitar/banjo	23	50	3	14	10
Harp	46	21	8	21	4
Other	40	40	-	-	20
Total	26	45	3	15	10

# Risk Factors for Injury

- Intrinsic
  - body habitus
  - range of motion (flexibility)
  - conditioning (strength, endurance)
  - underlying physical disorders/defects
- Extrinsic
  - “excessive” playing
  - technical changes or flaws
  - faulty posture or position
  - inappropriate repertoire
  - tension/stress



95 9 11



# A Physician's Approach to the Instrumentalist with Symptoms

- Inquiry into the onset, characteristics, relationship to playing, evolution, etc.
- Inquiry into the playing and practicing schedule
- General medical history
- Examination, emphasizing neurologic and musculoskeletal systems
- Observe playing their instrument

# Treatment Approaches for Playing-related Problems

- Modify posture (PT, body awareness methods)
- Modify technique (teacher, coach)
- Modify practice schedule/methods (patient)
- Modify instrument (luthier, technician)
- Physical/occupational therapy
- Stress management (psychologist, others)
- Medication, oral or injectible (physician)
- Surgery

# Modifying Playing/Practice

- Total time of playing and practicing
- Adequate breaks
- Warm-up and cool-down
- Alternate types of passage work during each session
- Emphasize mental preparation and practice





# Physical/Occupational Therapy

- Improve posture and playing position
- Strengthen proximal support
- Learn techniques of warm-up & cool-down
- Body conditioning/aerobic exercise
- Splints/supports (e.g., ring splints for hyperlax joints)

# Repertoire Issues

“When I composed that, I was conscious of being inspired by God Almighty. Do you think I can consider your puny little fiddle when He speaks to me?”

L. von Beethoven to I. Schuppanzigh

# Modifying Repertoire

- Not everyone can play everything
- Choosing appropriate repertoire for the individual's anatomical and technical equipment
- Delaying certain pieces until healing has been completed

# Conclusions

Successful rehabilitation of the instrumental musician after injury requires the combined efforts of the:

- physician
- therapist
- teacher
- instrumentalist