

### PRESIDENT'S LETTER SUMMER 2008

**Happy Summer! I hope that everyone is enjoying the warming temperatures!**

2008 is also exciting because it is an Olympic year. One of our PASIG members, Gina Pongetti, MPT, MA has had the great fortune to work with gymnasts on a consistent basis, as well as hundreds of elite and compulsory level athletes every year. She is a former J.O. competitor, and uses her perspective as a former athlete and current PT to help specifically guide rehab, analyze injury trends as they relate to coaching and Code of Points changes, as well as help others to better treat gymnasts. Please contact Gina Pongetti at [adagogymnastics@hotmail.com](mailto:adagogymnastics@hotmail.com) if you have questions about the gymnasts that you are treating.

To help you get excited and informed about gymnastics in the months prior to the Beijing Olympics, Gina Pongetti is going to be contributing information for a little series on gymnastics that will be in each email citation blast over the next few months. There will be information about changes in the Code of Points (judging) and other interesting biomechanical challenges that gymnasts face. Be looking for that in your inbox!

Also in the upcoming months be looking for a survey in your email. The PASIG plans to update the member directory on our website and we will be looking for information from each of you. Please take the time to fill this out when you see it!

**Caring for the Arts brings out the best in all of us!**

*Best regards,  
Leigh A. Roberts, PT, DPT, OCS*

### FLIP INTO ACTION!

*Contributed by Gina M. Pongetti,  
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Due to the enormous rise in support and public popularity of the events leading up the Olympic Games, I wanted to trigger some ideas, perspectives, and independent thinking about gymnasts and their injuries. Most of us do not, and may never, see the level of athletes that compete for the coveted spots every 4 years. However, the sport is built on progression, meaning that each athlete below these levels is developmentally on the path leading to the Elite Gymnast. So you may be treating a future Olympian!

This series of “food for thought” is meant to stimulate you to think about what you are watching during the gymnastics preliminary and Olympic events. There will be a new “thought” in each monthly citation blast for the next few months.

If you were a former high-level gymnast, this will be fun for you to reminisce and provide clinical applications to personal experience. If you are a fan, performing arts PT in general, or a former recreational gymnast, this may encourage you to return to a local gym and perform some more observation or spark some biomechanics literature searches. Either way, have fun!

Thought #1 - With the change in the Code of Points, which is the governing value system placed on each element that an athlete performs, and the way that the scores are calculated, elements/tricks become harder and harder as the years progress. Because of the increase in athletes in the “pool” for selection for Elite level as well as Olympic teams, and the increase in number of gymnastics clubs in the US, repetitions have increased in order to master skills. A great example of this is tumbling passes on floor. A gymnast used to perform 3 in each routine, and now we are at an average of 5. How do you think this is going to change the injuries that we see trickling down to the recreational level, as well as the Elite level?

### MANAGEMENT OF A MUSIC STUDENT WITH THORACIC, SHOULDER, ARM AND HAND PAIN

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Most injuries in violinists found in women over 25 and are caused by overuse or peripheral nerve compromise.<sup>1</sup> Symptomatic violinists complain of neck and arm pain related to increased neck and shoulder muscle tension, increased thoracic kyphosis, spinal hypomobility, and poor practice habits.<sup>1,2</sup>

Cervical radiculopathy can result from the sustained posture of cervical rotation and lateral flexion while holding the violin in the playing position thus narrowing the ipsilateral neural foramen and increasing the risk of nerve root irritation. Violinists are susceptible to musculoskeletal and neurologic injuries to the left upper extremity, while keyboardists tend to have injuries in the right upper extremity.<sup>2</sup> Most pain in music students can be attributed to long playing hours, excessive practice times, and difficult programs or technique changes.<sup>3</sup>

A 20-year-old female collegiate music major with a medical diagnosis of “Cervicalgia” sought physical therapy for complaints of neck and upper shoulder pain along with thumb numbness. The complaints began 2 years ago but worsened over the past couple of months limiting her ability to play the piano, violin, and dance. She is unable to practice the violin or piano for longer than 30 minutes or dance for more than 20 minutes. Her current repertoire requires daily practice of 1 to 2 hours or longer. She realized her condition was worsening as she required more frequent and longer duration rest periods between practices to allow her symptoms to resolve. Recently she has had difficulty gripping objects and noticed increased pain in her neck when studying.

Her primary complaint is a “sharp pain” between her shoulder blades (4–7/10 pain rating) with prolonged playing times and an 8/10 “stiff and achy” neck. She also reported thumb numbness with prolonged playing times. Once triggered, her symptoms will last up to 2 hours, but return to baseline after an hour rest. Previous summer physical therapy of heat, sensory TENS, general thoracic stretches, and exercises for scapular and shoulder strengthening provided temporary relief but her symptoms returned when she returned to her fall semester activities. Her current physical therapy goals are to identify the cause of her pain and minimize the pain level of future complaints. Her interest in minimizing pain in part reflects her belief that pain is an expected component of a musician’s career.

Although the doctor diagnosed her with Cervicalgia, a sharp or aching pain isolated to the neck region, her symptoms extend to the upper extremity and require a differential evaluation to identify the presence of cervical radiculopathy or another neural compromise. The results of the testing are found in Table 1.

The Neck Disability Index (NDI)<sup>5</sup> and the Disabilities of the Arm, Shoulder and Hand (DASH)<sup>6</sup> were used as self-reported outcome measures. The DASH contains a sports/performing arts module assessing her ability to play an instrument adding to its value in this population. At the time of the evaluation, she rated herself as “moderately disabled” on both the Neck Disability Index, as well as the DASH (both for ADLs and performing Arts Module). We evaluated pain, cervical ROM, joint mobility, neural tension, muscle tension, and posture. See Table 2 for objective findings.

When this patient’s presentation is compared to the inclusion criteria for cervical radiculopathy studied by Wainner et al,<sup>7</sup> a diagnosis of cervical radiculopathy was supported. See Table 3 (pg152) for comparison. In addition, our patient has a secondary diagnosis of neural involvement recreating symptoms in her thumbs.

A treatment plan was developed for this patient to address each impairment identified in the evaluation. See Table 4 (pg152) for treatment plan details. The artist was treated for a total of 13 visits. The initial treatments (visits 1-5) centered on pain management, extensive cervical and thoracic joint mobilization, and soft tissue mobilizations. As treatment progressed (visits 6-10), strengthening exercises were added for the deep cervical flexors and scapular stabilizers, and neural glides were incorporated. Her wrist and thumb hypomobility resolved by visit 10. The final stages of intervention (11-13) involved adding cervical strengthening exercises and teaching the patient self-neural glides to manage her neural tension complaints. Throughout all treatment sessions, patient education was emphasized for proper posture, active rest

**Table 1. Differential Diagnosis**

Cervical Radiculopathy Differential Diagnosis	Test	Result
Cervicalgia	Pain isolated to neck region	Pain radiated beyond neck
Thoracic Outlet Syndrome (TOS)	Adson, ROOS	(-) Adson, (-) ROOS
Neural Tension	Isolated nerve tensioning	(+) Radial, Ulnar; (-) Median
Double Crush Syndrome • Nerve Root Compression • Carpel Tunnel Syndrome	• Spurlings • Tinnel’s, Phalen’s	(+) Spurlings (-) Tinnel’s, Phalen’s
Trigger Points: Referred Pain	Palpation of UT, Lev. Scap trigger points (per Travell <sup>4</sup> )	Recreated a pain but not “her” complaint: Interpretation (-)

**Table 2. Patient Presentation at Initial Evaluation, Intervention Focus, and Progress at Discharge**

Outcome Measures	Posture	Pain	Cervical ROM	R thumb ROM	Joint Mobility	Neural Tension	Palpation	Practice Times
Initial Evaluation DASH: 26% NDI: 22%	Rounded shoulders Forward head Increased thoracic kyphosis	Neck: 8/10 Back :7/10 Thumb numbness	Extension ↓ 30% L Rot ↓ 25% L SB ↓ 25%	↓ supination at end range ↓tt ABD	Hypomobile C2-4 T1-2 T5-7 B 1 <sup>st</sup> MCP R 5 <sup>th</sup> MCP  Hypermobile C5-7  Recreation of Sx's at C5-6	(+) Radial – for thumb numbness  (+) Ulnar	Muscle tension thru-out cervical region  Trigger Points B (L>R) UT, Lev. Scap	Violin: 30 min  Dance: 15 min
Intervention	N/A	Pt education TENS HEAT	Manual/ Self Stretching	Joint Mobs	Joint Mobs	Neural Glides / Stretches	Soft / Deep Tissue Mobilization	Active rest Education
D/C	Improved ergonomic postures while playing	Neck: 2/10 Back: 2/10 Thumbs: Trace	Full, pain-free in all directions	Normal supination and ABD ROM	Normal C2-4 T1-2 T5-7 B 1 <sup>st</sup> MCP R 5 <sup>th</sup> MCP  Slightly Hypermobile C5-7	(-) Radial  (-) Ulnar	Decreased muscle tension  No Trigger Points	Violin: 2 hr* Dance: 1 hr* *with scheduled rest times

**Table 3. Clinical Prediction Comparison for Cervical Radiculopathy**

Our Violinist	Wainner's CPR
(+) Neural Tension	ULTT A ↑ Sx's
Recreation of scap pain with B max closing positions (L >R)	Spurlings A ↑ Sx's
Distraction ↓ sharp pain, but ↑ muscle ache	Distraction ↓ Sx's
Cervical ROM limited by 25%	Involved Cervical Rot < 60°
Secondary Dx of wrist tightness and neural sensitivity in thumbs	

**Table 4. Treatment Plan**

	Visits 1-5	Visits 6-10	Visits 11-13	All Visits
Treatments	<u>Pain management</u> <ul style="list-style-type: none"> <li>Heat</li> <li>TENS</li> </ul>	<u>Cervical endurance</u> <ul style="list-style-type: none"> <li>Chin tucks (5 sec hold x 20)</li> </ul>	<u>Cervical strength</u> <ul style="list-style-type: none"> <li>4 way isometrics (10 sec hold x 10)</li> </ul>	<u>Postural education</u> <ul style="list-style-type: none"> <li>Head back</li> <li>Shoulders down and in</li> </ul>
	<u>Joint Mobs</u> <ul style="list-style-type: none"> <li>Cervical                             <ul style="list-style-type: none"> <li>PA's</li> <li>Unilaterals</li> <li>Sideglides</li> </ul> </li> <li>Thoracic                             <ul style="list-style-type: none"> <li>PA's</li> <li>Unilaterals</li> </ul> </li> <li>MCP's</li> </ul>	<u>Scapular Strength</u> <ul style="list-style-type: none"> <li>Scap sets</li> <li>Tband rows ,ext</li> <li>Prone rows</li> <li>Prone hor. Abd</li> </ul>	<u>Self neural glides</u> <ul style="list-style-type: none"> <li>Radial</li> <li>Ulnar</li> </ul>	<u>Active rest</u> <ul style="list-style-type: none"> <li>Short practice periods</li> <li>Scheduled rest periods during practice</li> </ul>
	<u>STM / Manual Stretching</u> <ul style="list-style-type: none"> <li>UT's</li> <li>Lev. Scaps</li> </ul>	<u>Neural glides</u> <ul style="list-style-type: none"> <li>Radial</li> <li>Ulnar</li> </ul>		<u>HEP</u> <ul style="list-style-type: none"> <li>Self stretches</li> <li>TE's added as able</li> </ul>

(shorter practice times, practice breaks every 15 min), and proper technique with her HEP.

In addition to addressing her impairments, treatment was centered on patient education in 2 focal areas. The ergonomic posture and technique she used while playing the violin was evaluated and advice was provided. Please see photos 1 through 4 for ergonomic posture comparisons. The patient was also educated on the self-management of her symptoms with stretching to maintain body alignment and soft tissue extensibility.

As depicted in Table 1, she improved in every objective measure including pain, ROM, joint mobility, neural tension, palpation, self-reported functional levels, and was able to increase her playing and practicing times. She was independent in self stretching and identifying the need to balance practice and rest.

A combined belief of “more is better” in terms of practice and performance and accepting pain as part of music-making can prevent musician from seeking help when they are injured. It is important that musicians perceive themselves as athletes, know how to look after their bodies. Avoiding excessive practice sessions and learning self-help techniques to combat the early signs of overuse injuries can become an area of understanding and respect. Ergonomic modifications can help reduce repetitive stresses and can be incorporated into a musician’s repertoire without negatively impacting performance quality.

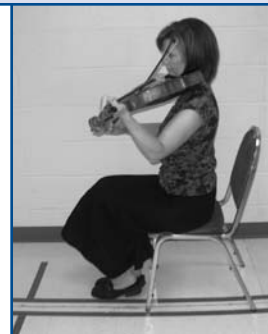
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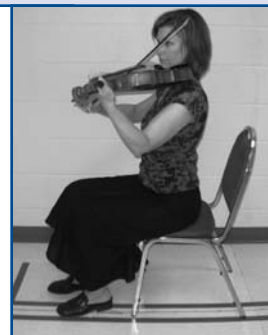
**Photo 1.**

Poor ergonomic posture – side view: Poor foot spacing, decreased arm elevation, and increased cervical flexion.



**Photo 2.**

Corrected ergonomic posture – side view: Staggered feet, sitting at the front of the chair, increased arm height, and more neutral cervical spine.



**Photo 3.**

Poor ergonomic posture – back view: Increased cervical flexion, slouching, and poor foot spacing.



**Photo 4.**

Corrected ergonomic posture – back view: More neutral cervical spine, upright sitting position, staggered stance.

