



# PASIG PERFORMING ARTS

SPECIAL INTEREST GROUP



**ORTHOPAEDIC SECTION**  
AMERICAN PHYSICAL THERAPY ASSOCIATION



**PASIG MONTHLY CITATION BLAST: No. 111**

**December 2015**

Dear Performing Arts SIG members:

The PASIG has been busy! We have a lot of updates, please see below. Wishing everyone a wonderful holiday season and Happy New Year!

### **Fellowship Taskforce Performing Arts Physical Therapy Analysis Survey:**

An assembled team of members of the Orthopaedic Section, APTA, Performing Arts Special Interest Group (PASIG) and identified practitioners in the sub-specialty field of performing arts physical therapy, are working to revalidate the 2004 *Description of Specialized Clinical Practice (DSCP) in Physical Therapy for Performing Artists*. The intent of this revalidation process is three-fold: 1.) To provide current practice guidelines for practitioners in the sub-specialty field of Performing Arts Physical Therapy, 2.) To transform the 2004 DSCP to a Description of Advanced Specialized Practice (DASP), a document of skills, attributes, and competencies appropriate for fellowship level curriculum and expertise, and 3.) To create a Description of Fellowship Practice (DFP) in Performing Arts Physical Therapy for fellowship curriculum development. The taskforce will update us on survey results and DFP progress in the PASIG business meeting.

**CSM 2016** is here! We hope to see you at the following PASIG-related events, and at the Orthopaedic Section table, Wednesday, February 17<sup>th</sup>-Saturday, February 20<sup>th</sup>.  
**WEDNESDAY:** At CSM 2016, the PASIG will offer a 1-day preconference course, "Dynamic Neuromuscular Stabilization: Assessment & Management of Performing Artists," given by Clare Frank, PT, DPT, OCS, FAAOMPT, and Annette Karim, PT, DPT, OCS, FAAOMPT, on Wednesday, February 17, 2016, 8:00 a.m. - 5:00 p.m., in the Pacific Ballroom D, Hilton Anaheim (OR-P2-7572).

**FRIDAY AM:** The Orthopaedic Section Performing Arts SIG Membership Meeting will be held bright and early: Friday, February 19, 2016, 7:00 AM-7:45 a.m.,

Ballroom A, Anaheim Convention Center.

**FRIDAY AFTERNOON:** We will also have our regular PASIG programming, “Life on Broadway: Care of the Professional Theatrical Performer” by Jennifer Green, PT, MS, CFMT, and David Weiss, MD, FAAOS, on Friday, February 19th, 3:00 p.m. - 5:00 p.m., in room 304 AB, Anaheim Convention Center (OR-2C-3861). All are welcome!

**FRIDAY NIGHT:** Orthopaedic Section Meet & Greet, 6:30 p.m.-7:30 p.m., Friday, February 19, 2016, in the California Ballroom B, in the Hilton Anaheim. Students: The PASIG awards an annual student scholarship

**Call for 2016 PASIG committee chairs!** We have several positions available. We have a lot of fun, and a little effort goes a long way, as we move forward in the areas of education, research, screening, membership, PR, and scholarship. Please consider nominating yourself and a colleague in order to become more involved with the PASIG. For more information, contact Liz Chesarek: [echesarek@gmail.com](mailto:echesarek@gmail.com)

**A PASIG student scholarship** recipient has been selected! Meet our winner at the PASIG business meeting, and come support our students at their poster presentations!

**Call for case reports:** If you have a brief, clinically-focused case report on a performing arts PT patient, or a clinical commentary, please contact Annette Karim to submit your writing for the next Orthopaedic Physical Therapy Practice Magazine: [neoluvsonlyme@aol.com](mailto:neoluvsonlyme@aol.com)

**Tweet Tweet! We have a Twitter page!**

<https://twitter.com/PT4Performers>

Post your articles and info on your site, let's get connected!

**Check out the Orthopaedic section Facebook page**, where you can find and post PASIG info: <https://www.facebook.com/pages/APTA-Orthopaedic-Section/121020534595362>

**Below is a list of the PASIG leadership. Please consult this list regarding contact info:**

Annette Karim, President	2014-2017	<a href="mailto:neoluvsonlyme@aol.com">neoluvsonlyme@aol.com</a>
Mark Sleeper, Vice President/Education Chair	2013-2016	<a href="mailto:markslee@buffalo.edu">markslee@buffalo.edu</a>
Elizabeth Chesarek, Nominating Committee Chair	2013-2016	<a href="mailto:echesarek@gmail.com">echesarek@gmail.com</a>
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Amanda Blackmon, Membership Chair	2014-2016	<a href="mailto:MandyDancePT@gmail.com">MandyDancePT@gmail.com</a>
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Anna Saunders, Secretary/Student Scholarship Chair	2015-2017	<a href="mailto:annarosemary@gmail.com">annarosemary@gmail.com</a>
Andrea N. Lasner, Nominating Committee	2015-2018	<a href="mailto:alasner1@jhmi.edu">alasner1@jhmi.edu</a>

**WE NEED MORE CONTRIBUTORS TO OUR MONTHLY CITATION BLASTS!!!!**

Past Monthly citation blasts are available, with citations and EndNote file, listed on the website:

[http://www.orthopt.org/content/special\\_interest\\_groups/performing\\_arts/citations\\_endnotes](http://www.orthopt.org/content/special_interest_groups/performing_arts/citations_endnotes)

**TOPICS THAT HAVE BEEN COVERED RECENTLY INCLUDE:**

*Stress fractures of the foot and ankle*  
*Dry needling*  
*Dynamic Warm Up and Stretching*  
*Platelet Rich Plasma Injections*  
*Back Pain in Dancers*  
*Hallux Valgus in Dancers*  
*Posterior ankle impingement*  
*TMD in Musicians*  
*Concussions*  
*Bone Mineral Density in Dancers*  
*Serratus Anterior Strengthening for Dancers*  
*Focal Dystonia*  
*ACL Injuries in Dancers*

**If you are interested in contributing by writing a citation blast, contact us,**

**Brooke Winder:** [BrookeRwinder@gmail.com](mailto:BrookeRwinder@gmail.com)

**Laura Reising:** [lbreising@gmail.com](mailto:lbreising@gmail.com)

Best regards,

*Laura*

Laura Reising, PT, DPT, OCS

PASIG EndNote Organizer

*Physical Therapist, Allegheny General Hospital - Human Motion Rehabilitation, Pittsburgh, PA.*

Home: [lbreising@gmail.com](mailto:lbreising@gmail.com) Work: [lreising@wpahs.org](mailto:lreising@wpahs.org)

**PASIG Research Committee members:**

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Laura Reising PT, DPT, OCS [lbreising@gmail.com](mailto:lbreising@gmail.com) (EndNote Organizer)

## **PERFORMING ARTS CONTINUING EDUCATION, CONFERENCES, AND RESOURCES**

Musician Health Series, Janice Ying, PT, DPT, OCS  
Glendale Adventist Therapy and Wellness Center, Los Angeles area (Eagle Rock), CA  
<http://www.musicianshealthcorner.com/>  
[Healthy Musician Series - Overuse](#)

Orthopaedic Section Independent Study Course. *20.3 Physical Therapy for the Performing Artist.*

Monographs are available for:

- Figure Skating (J. Flug, J. Schneider, E. Greenberg),
  - Artistic Gymnastics (A. Hunter-Giordano, Pongetti-Angeletti, S. Voelker, TJ Manal),
- and
- Instrumentalist Musicians (J. Dommerholt, B. Collier).

Contact: Orthopaedic Section at: [www.orthopt.org](http://www.orthopt.org)

Orthopaedic Section-American Physical Therapy Association,  
Performing Arts SIG

[http://www.orthopt.org/content/special\\_interest\\_groups/performing\\_arts](http://www.orthopt.org/content/special_interest_groups/performing_arts)

Performing Arts Citations and Endnotes

[http://www.orthopt.org/content/special\\_interest\\_groups/performing\\_arts/citations\\_endnotes](http://www.orthopt.org/content/special_interest_groups/performing_arts/citations_endnotes)

ADAM Center

<http://www.adamcenter.net/>

Publications:

<http://www.adamcenter.net/#!vstc0=publications>

Conference abstracts:

<http://www.adamcenter.net/#!vstc0=conferences>

Dance USA

<http://www.danceusa.org/>

Research resources:

<http://www.danceusa.org/researchresources>

Professional Dancer Annual Post-Hire Health Screen:

<http://www.danceusa.org/dancerhealth>

Dancer Wellness Project

<http://www.dancerwellnessproject.com/>

Becoming an affiliate:

<http://www.dancerwellnessproject.com/Information/BecomeAffiliate.aspx>

Harkness Center for Dance Injuries, Hospital for Joint Diseases

<http://hjd.med.nyu.edu/harkness/>

Continuing education:

<http://hjd.med.nyu.edu/harkness/education/healthcare-professionals/continuing-education-courses-cme-and-ceu>

Resource papers:

<http://hjd.med.nyu.edu/harkness/dance-medicine-resources/resource-papers-and-forms>

Links:

<http://hjd.med.nyu.edu/harkness/dance-medicine-resources/links>

Informative list of common dance injuries:

<http://hjd.med.nyu.edu/harkness/patients/common-dance-injuries>

Research publications:

<http://hjd.med.nyu.edu/harkness/research/research-publications>

International Association for Dance Medicine and Science (IADMS)

<http://www.iadms.org/>

Resource papers:

<http://www.iadms.org/displaycommon.cfm?an=1&subarticlenbr=186>

Links:

<http://www.iadms.org/displaycommon.cfm?an=5>

Medicine, arts medicine, and arts education organization links:

<http://www.iadms.org/displaycommon.cfm?an=1&subarticlenbr=5>

Publications:

<http://www.iadms.org/displaycommon.cfm?an=3>

Performing Arts Medicine Association (PAMA)

<http://www.artsmed.org/>

<http://www.artsmed.org/symposium.html>

Interactive bibliography site:

<http://www.artsmed.org/bibliography.html>

Related links:

<http://www.artsmed.org/relatedlinks.html>

Member publications:

<http://artsmed.org/publications.html>

***(Educators, researchers, and clinicians, please continue to email your conference and continuing education information to include in future blasts)***



## **Biomechanics and Posture in Musicians**

This PASIG Citation Blast in December 2015 provides an overview of information that is currently available regarding biomechanics, postural deficits and asymmetries in musicians and how it can make them vulnerable to upper extremity injuries. The research supports the need for postural awareness and lengthened tension-free alignment in musicians through neuromuscular re-education to promote ease of movement and possibly prevent future injuries. We can use this information to identify areas that need further research and to develop effective treatment for postural awareness, promoting lumbopelvic and scapular stabilization and finding ease of movement as rehabilitative protocol and preventative strategies for musicians.

*Laura Reising, PT, DPT, OCS*

*Physical Therapist*

*Allegheny General Hospital – Human Motion Rehabilitation  
Pittsburgh, PA.*



**Barczyk-Pawelec K, Sipko T, Demczuk-Wlodarczyk E, Boczar A.  
Anteroposterior spinal curvatures and magnitude of asymmetry in the trunk  
in musicians playing the violin compared with nonmusicians. *J Manipulative  
Physiol Ther.* 2012; 35(4): 319-326.**

**OBJECTIVE:** Playing an instrument often requires a certain posture and asymmetric position that may affect the anteroposterior spinal curvatures and may lead to postural asymmetry. The aim of the study was to evaluate the spinal curvatures in the sagittal plane and the magnitude of asymmetries in the trunk in the frontal plane in a group of music students in comparison with a control group.

**METHODS:** The group of 67 students aged 20 to 26 years was made up of 2 subgroups: the musicians (violin playing students of the Academy of Music in Wroclaw) and the control group (physical therapy students who played no instruments). The examination included an interview, measuring of somatic characteristics, and evaluation of body posture by means of the photogrammetric method.

**RESULTS:** The spinal curvatures of the instrumentalists in the sagittal plane differ from the control group mainly in terms of length and depth parameters. Compared with the control group, the musicians were characterized by statistically more significantly longer and deeper thoracic kyphosis ( $P < .01$ ) and more shallow lumbar lordosis ( $P < .05$ ), a greater angle of thoracic kyphosis ( $P < .005$ ), and a smaller inclination angle of the thoracolumbar and lumbosacral section of the spine ( $P < .01$ ).

**CONCLUSION:** In the group of musicians, the asymmetries in the area of shoulders and waist triangles as well as the distance of the spinous processes

from the C7 to S1 line were more frequent.

**Blanco-Piñero P, Pino Díaz-Pereira M, Martínez A. Common postural defects among music students. *J Bodyw Mov Ther.* 2015; 19(3):565-72.**

Postural quality during musical performance affects both musculoskeletal health and the quality of the performance. In this study we examined the posture of 100 students at a Higher Conservatory of Music in Spain. By analysing video tapes and photographs of the students while performing, a panel of experts extracted values of 11 variables reflecting aspects of overall postural quality or the postural quality of various parts of the body. The most common postural defects were identified, together with the situations in which they occur. It is concluded that most students incur in unphysiological postures during performance. It is hoped that use of the results of this study will help correct these errors.

**Brockman R, Tubiana R, Chamagne P. Anatomic and kinesiologic considerations of posture for instrumental musicians. *J Hand Ther.* 1992;5(2): 61-64.**

ABSTRACT: Everyday activities of organisms are dictated by the basic principle of economy. Characteristic positions, or postures, are assumed to perform tasks of all kinds. Ideally, the desired posture is created with the minimum stress on the body and is maintained with a minimum of energy expenditure. This principle, while important for the general populace, becomes of prime importance for those who regularly stress the system by demanding fine, repetitive, highly stereotyped motions such as those required by the professional or active amateur instrumental musician. Although the concept that solid supports allows freedom of fine movements is not a new one for musicians, the essential points of postural support are not always obvious. Significant upper extremity problems in musicians often manifesting in the hand are usually at least partially the result of a lack of appropriate posture, which precipitates an imbalance in the complex chain of movement. Here we hope to elucidate some of the essential points of posture important for musicians.

**Kelleher L, Campbell K, Dickey J. Biomechanical research on bowed string musicians. *Med. Probl. Perform. Art.* 2013;28: 212-218.**

ABSTRACT: Performing arts biomechanics is concerned with quantifying the musculoskeletal demands of artistic tasks. The growing body of related research has prompted this scoping study, solely focused on quantitative research, to summarize the state of the science, identify knowledge gaps, and identify opportunities for future research.

OBJECTIVES: To identify, summarize, and categorize quantitative research on the biomechanics of violin, viola, cello, and double bass players, using scoping study methodology.

METHODS: Established scoping study methodology was used to identify and categorize existing research. We identified 74 articles for review. Of these, 34

met our scoping study criteria and were included in this study.

**RESULTS:** Twenty-one of the 34 articles that met the scoping criteria were published since 2000. Investigations using electromyography (16 studies) and kinematics (15 studies) comprise the bulk of the research. Two studies employed force transducers for data collection. Violinists were the most frequently studied musicians (22 studies) and double bass players were the least (1 study). Fewer than half of the studies used solely professional musicians as their subjects (13 studies).

**CONCLUSIONS:** This scoping study confirmed that quantitative biomechanical research into bowed string musicians has been performed with increasing frequency and that there are voids in the research, particularly in investigating mechanisms of injury and protective strategies. Currently, arts biomechanics research is largely descriptive in nature. There are few studies that investigate protective strategies, although it is expected that the field will progress to incorporate this type of research.

**Lahme A, Eibl I, Reichl F. Typical Musculoskeletal Patterns in Upper String Players with Neck and Arm Problems. *Med Probl Perform Art.* 2014; 29(4): 241-2.**

**ABSTRACT:** Upper string players face a very high risk of playing-related disorders. Based on a questionnaire and a physical examination, this study investigated if a typical musculoskeletal pattern emerges. It was found that the typical upper string musician shows problems with the neck, shoulders (with equal probability for left and right side,  $X^2 = 0.53$ ,  $p > 0.05$ ), right elbow ( $X^2 = 4.80$ ,  $p < 0.05$ ) and hand ( $X^2 = 3.90$ ,  $p < 0.05$ ), and fingers of the left hand ( $X^2 = 9.53$ ,  $p < 0.01$ ). This finding can be used to improve planning of preventive measures and therapeutic treatments.

**Lee SH, Carey S, Dubey R, Matz R. Intervention program in college instrumental musicians, with kinematics analysis of cello and flute playing: a combined program of yogic breathing and muscle strengthening-flexibility exercises. *Med Probl Perform Art.* 2012; 27(2): 85-94.**

**ABSTRACT:** College musicians encounter health risks not dissimilar to those of professional musicians. Fifteen collegiate instrumental musicians participated in the intervention program of yogic-breathing and muscle-strengthening and flexibility exercises for 8 weeks. Pre- and post-intervention data from the Health-Pain-Injury Inventory (HPI) and the Physical & Musical-Performance Efficacy Assessment Survey (PME) were analyzed for the effects of the program on the musicians' physical and musical-performance efficacy. HPI results showed that the majority of our sample had healthy lifestyles and minimal pain and injuries but irregular eating and exercise habits. The pre-intervention PME data showed a high level of musical efficacy (i.e., awareness of music technique, tone, and flow) but a low-level of physical efficacy (i.e., awareness of posture, tension, and movement flexibility). Post-intervention data showed that the program improved physical efficacy by increased awareness of posture and tension. In



2 volunteer musicians, kinematics motion analysis was conducted for exploratory purposes. Our cellist played the scale using a larger range of motion (ROM) in right shoulder flexion and abduction and slightly increased rotation while keeping decreased right elbow ROM after the intervention program. The flutist shifted the body weight from one foot to the other more in the second playing post-intervention. These changes can be attributed to the increased physical efficacy that allowed freedom to express musicality. Findings from these case scenarios provide empirically based hypotheses for further study. We share our experience so that others may use our model and instruments to develop studies with larger samples.

**Medoff LE. The Importance of Movement Education in the Training of Young. *Medical problems of performing artists* 14.4 (1999): 210.**

**ABSTRACT:** This paper: (1) explores the role movement training can play in improving playing quality and decreasing musculoskeletal injury in the young violinist, (2) discusses how to recognize and correct postural faults common to the young violin student, and (3) demonstrates the effectiveness of incorporating a specific method of movement and posture training into the treatment of injured musicians. The author describes four years of experience in treating injured violinists with neuromuscular retraining of movement and posture. The author hypothesizes that the incidence of musculoskeletal injury in violinists can be decreased if efficient posture and movement mechanics are taught at an early age either through supplementary education or within violin technique training. The teaching philosophies of four prominent music/movement educators are presented: Emile Jaques-Dalcroze, Rudolf Laban, John Kendall, and Paul Rolland, whose common goal is to improve the movement quality of the performing artist. Laban analysis and Dalcroze Eurhythmics train awareness of various aspects of movement. Master teachers John Kendall and Paul Rolland emphasize balanced posture and relaxed, efficient movement. Since most music programs do not include such programs, the violin teacher must correct posture and movement mechanics. Effectiveness in this role requires looking at the whole body, not just the arms, hands, and head. A five-component method of retraining posture and movement is presented: (1) relaxation and diaphragm breathing, (2) skeletal balance and movement coordination, (3) centering and stabilization, (4) lengthening, and (5) strengthening. Constructive rest, centered breathing, and imagined-movement exercises based on the teachings of Mable Elsworth Todd and Lulu Sweigard are employed to release tension, correct alignment, and improve movement mechanics. Once tension-free skeletal balance is achieved, the musician is taught to stabilize posture and maintain lengthened tension-free alignment through centering exercises that emphasize proximal control. Strengthening is most successful after the musician internalizes the first four concepts. A two-year outcome study (1996-1998) of musicians with overuse injuries treated at the Northern Arizona University Physical Therapy Clinic utilizing this retraining technique produced the following results: 23 of 45 musicians,

including 13 string players, were treated for repetitive stress injuries. All musicians treated for overuse received an average of nine treatments. The musicians returned to their preinjury levels of playing after an average of eight visits.

**Medoff LE, Short K. Treatment of Repetitive Stress Injury in a High Altitude Saxophone Player with Pectus Excavatum and Scoliosis. *Orthopaedic Physical Therapy Practice*. 2002; 14(2:02):11-18.**

**INTRODUCTION:** Repetitive stress injury is a common occurrence in serious musicians, especially those studying at a conservatory or university. Faulty posture, breathing, and movement mechanics have been implicated in the development of overuse injury in the musician. Many authors have stressed the importance of addressing a musician's posture and movement mechanics to ensure the successful return to performance. We believe that the musculoskeletal complaints that brought this young saxophone player to physical therapy were caused primarily by faulty movement mechanics and poor postural habits. It is also likely that long-term respiratory dysfunction, that this patient did not acknowledge, played a role in the development of poor habits and overuse injuries.

**PURPOSE:** The purpose of this case study is to identify the factors contributing to the development of repetitive stress injury in a young saxophone player. We present the unique combination of factors that adversely affected breathing mechanics and posture and describe the neuromuscular re-education process that allowed the musician to return to his desired level of practice and performance.

**Steinmetz A, Seidel Wolfram, Muche B. Impairment of postural stabilization systems in musicians with playing-related musculoskeletal disorders. *J Manipulative Physiol Ther*. 2010;33(8): 603-11.**

**OBJECTIVE:** Recent research demonstrates the importance of postural stabilization systems (PSS) in back pain. The purpose of this study was to examine the frequency of PSS disturbances in musicians experiencing playing-related musculoskeletal disorders (PRMDs).

**METHODS:** Analysis for the presence of impaired PSS (lumbopelvic and scapular stabilizing system dysfunction, upper crossed syndrome) in 84 musicians.

**RESULTS:** Analysis of clinical examination data revealed dysfunctions of the PSS to be present in 78 (93%) of these subjects. Eighty-five percent were found to have impairments of scapular, 71% impairments of lumbopelvic stabilization system, and 57% were found to have upper crossed syndrome. Subgroup analysis (upper strings, lower strings, wind and keyboard instruments) showed significantly more impairment of the lumbopelvic stabilization system for upper and lower strings ( $P = .008$ ), whereas similar rates for disturbances of scapular stabilizers and upper crossed syndrome were seen across subgroups. Furthermore, significant sex differences with a higher frequency of scapular stabilizers ( $P = .014$ ) and upper crossed

syndrome ( $P < .001$ ) in women were present.

**CONCLUSION:** This study suggests that insufficiencies of the postural stabilization systems play an important role in the manifestation of musculoskeletal pain and PRMD in musicians. Although there are no prospective research data concerning PSS in musicians, the present authors' empirical observations and clinical experience support the notion that the clinical course and therapeutic outcomes of PRMD bear relationship to the function of the stabilization systems. We therefore argue for a greater emphasis on the examination and training of the postural systems in the integrated prevention, treatment, and rehabilitation of musicians.

