

#### PASIG MONTHLY CITATION BLAST: No. 127

June 2017

Dear Performing Arts SIG members:

Summer is finally here! This is a great time to plan for next year. Please see the following for exciting opportunities to get involved with the PASIG.

**Upcoming conferences:** The next Combined Sections Meeting will be held February 21-24, 2018 in New Orleans, Louisiana.

**Call for Performing Arts Clinical Rotation Sites:** We are currently updating the list of clinical rotation sites on our website. Please e-mail Rosie Canizares (<u>rcc4@duke.edu</u>) if you take students and would like your information included on this list.

**Dancer Screening:** Please contact Mandy Blackmon at <u>mandydancePT@gmail.com</u> if you have questions or would like to be involved in this group.

**Fellowship Taskforce Update!** The practice analysis re-validation project team is working on final revisions for the upcoming publication of the Description of Fellowship Practice (DFP) for Performing Arts Physical Therapy. The Description of Advanced Specialized Practice (DASP) in Performing Arts Physical Therapy was approved by the ABPTRFE in January 2016. The DFP is currently being reviewed by ABPTRFE. This is the final phase for laying the groundwork for providing current practice guidelines in the sub-specialty area as well as curriculum requirements for Performing Arts PT fellowships. Please contact Mariah Nierman Mariah.Nierman@osumc.edu or Laurel Abbruzzese La110@cumc.columbia.edu if interested. **Room for new committee members!** There is room for new committee members, and students are welcome to participate. Please refer to the list below for contact information.

Annette Karim, President	2017-2020	akarim@apu.edu
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Janice Ying, ISC Chair	2017-2019	JaniceYingDPT@gmail.com
Megan Poll, Secretary	2017-2019	meganpoll@gmail.com

**Membership**: Current PASIG members, please remember to update your membership: https://www.orthopt.org/login.php?forward\_url=/surveys/membership\_directory.

https://www.orthopt.org/login.php?forward\_url=/surveys/membership\_directory. php

Social Media: For fun PT info and related performing artists info...

1) Facebook page: (closed) If you would like to be a part of the group, email Dawn (Doran) Muci: Dawnd76@hotmail.com

2) follow PASIG on Twitter: @PT4PERFORMERS

**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: <a href="mailto:akarim@apu.edu">akarim@apu.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

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

Periodization in Dance (Current) Irish Dancing Flexor Hallucis Longus Dysfunction Sacroiliac and Pelvic Dysfunction Screening Gyrotonics ® and Gyrokinesis ® for the Performing Artist Medial Tibial Stress Syndrome 2<sup>nd</sup> Tarsometatarsal Joint Injuries in Dancers Screening Tools for the Young Dancer Thoracic Outlet Syndrome and Nerve Entrapment in Instrumental Musicians Plyometric Training in Dancers HVLAT for Lower Extremity Conditions Inguinal Disruption Femoroacetabular Impingement Hand and Wrist Conditions in Gymnasts Factors in Optimal Turnout Achilles Tendinopathy Biomechanics and Posture in Musicians

### If you are interested in contributing by writing a citation blast or joining the research committee, contact me at <u>lbreising@gmail.com</u>.

Sincerely,

Laura

Laura Reising, PT, DPT, MS, OCS Research Chair, PASIG Research Committee *Allegheny Health Network, Wexford Health + Wellness Pavilion Wexford, PA* Home: lbreising@gmail.com Work: Laura.REISING@AHN.org

#### **PASIG Research Committee members:**

Shaw Bronner PT, PhD, OCS, <u>sbronner@liu.edu</u> Jeff Stenback PT, OCS, <u>jsptocs2@hotmail.com</u> Sheyi Ojofeitimi PT, DPT, OCS,<u>sojofeit@gmail.com</u> Susan D. Fain PT, DMA, <u>sfain@ptcentral.org</u> Brooke Winder, PT, DPT, OCS<u>, BrookeRwinder@gmail.com</u> Sarah Edery-Altas, PT, DPT <u>Sarah.Edery-Atlas@nyumc.org</u> (EndNote Organizer)

#### PERFORMING ARTS CONTINUING EDUCATION, CONFERENCES, & RESOURCES

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: <u>www.orthopt.org</u>

Orthopaedic Section-American Physical Therapy Association, Performing Arts SIG

http://www.orthopt.org/content/special interest groups/performing arts

Performing Arts Citations and Endnotes

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ADAM Center

http://www.adamcenter.net/ Publications: <u>http://www.adamcenter.net/#!vstc0=publications</u> Conference abstracts: <u>http://www.adamcenter.net/#!vstc0=conferences</u>

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

Glendale Adventist Therapy and Wellness Center, Los Angeles area (Eagle Rock), CA <u>http://www.musicianshealthcorner.com/</u> Healthy Musician Series - Overuse

Harkness Center for Dance Injuries, Hospital for Joint Diseases <a href="http://hjd.med.nyu.edu/harkness/">http://hjd.med.nyu.edu/harkness/</a>

Continuing education: http://hjd.med.nyu.edu/harkness/education/healthcareprofessionals/continuing-education-courses-cme-and-ceu Resource papers: http://hjd.med.nyu.edu/harkness/dance-medicine-resources/resourcepapers-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) <u>http://www.iadms.org/</u>

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) <u>http://www.artsmed.org/</u> <u>http://www.artsmed.org/symposium.html</u> Interactive bibliography site: <u>http://www.artsmed.org/bibliography.html</u> Related links: <u>http://www.artsmed.org/relatedlinks.html</u> Member publications: <u>http://artsmed.org/publications.html</u>

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

#### Periodization in Dance

Concern regarding early sports specialization and the improper accumulation of training loads in the sports world is ever increasing—especially in relation to injury incidence and overall athlete well-being. Periodization is often utilized in sports training to help regulate training loads, minimize burnout and optimize performance levels. Dance training is typically undertaken year-round with the requirement for peak performance occurring frequently and often with less predictability than in other sports. This makes the periodization of dance training very challenging. Given that overtraining and burnout symptoms are common in dancers and can be linked increased injury risk, an understanding of the science and benefits of periodization is important for performing arts physical therapists. As physical therapists are often called upon to assist companies, university programs, and studios with not only injury management but injury prevention, this knowledge can be extremely beneficial. The articles gathered below focus on burnout, overtraining, early athlete specialization, and the principles of periodization.

Brooke Winder, PT, DPT, OCS California State University, Long Beach Sarton Physical Therapy Email: <u>BrookeRwinder@gmail.com</u>

## Bourdon, Pitre C., et al. "Monitoring Athlete Training Loads: Consensus Statement." *International Journal of Sports Physiology and Performance* 12.Suppl 2 (2017): S2-161.

ABSTRACT: Monitoring the load placed on athletes in both training and competition has become a very hot topic in sport science. Both scientists and coaches routinely monitor training loads using multidisciplinary approaches, and the pursuit of the best methodologies to capture and interpret data has produced an exponential increase in empirical and applied research. Indeed, the field has developed with such speed in recent years that it has given rise to industries aimed at developing new and novel paradigms to allow us to precisely quantify the internal and external loads placed on athletes and to help protect them from injury and ill health. In February 2016, a conference on "Monitoring Athlete Training Loads-The Hows and the Whys" was convened in Doha, Oatar, which brought together experts from around the world to share their applied research and contemporary practices in this rapidly growing field and also to investigate where it may branch to in the future. This consensus statement brings together the key findings and recommendations from this conference in a shared conceptual framework for use by coaches, sport-science and -medicine staff, and other related professionals who have an interest in monitoring athlete training loads and serves to provide an outline on what athlete-load monitoring is and how it is being applied in research and practice, why load monitoring is important and what the underlying rationale and prospective goals of monitoring are, and where athlete-load monitoring is heading in the future.

## Drew, Michael K., and Caroline F. Finch. "The relationship between training load and injury, illness and soreness: a systematic and literature review." *Sports Medicine* 46.6 (2016): 861-883.

BACKGROUND: Clinically it is understood that rapid increases in training loads expose an athlete to an increased risk of injury; however, there are no systematic reviews to qualify this statement.

OBJECTIVE: The aim of this systematic review was to determine training and competition loads, and the relationship between injury, illness and soreness. METHODS: The MEDLINE, SPORTDiscus, CINAHL and EMBASE databases were searched using a predefined search strategy. Studies were included if they analysed the relationship between training or competition loads and injury or illness, and were published prior to October 2015. Participants were athletes of any age or level of competition. The quality of the studies included in the review was evaluated using the Newcastle–Ottawa Scale (NOS). The level of evidence was defined as strong, 'consistent findings

among multiple high-quality randomised controlled trials (RCTs)'; moderate, 'consistent findings among multiple low-quality RCTs and/or nonrandomised controlled trials (CCTs) and/or one high-quality RCT'; limited, 'one low-quality RCT and/or CCTs, conflicting evidence'; conflicting, 'inconsistent findings among multiple trials (RCTs and/or CCTs)'; or no evidence, 'no RCTs or CCTs'.

RESULTS: A total of 799 studies were identified; 23 studies met the inclusion criteria, and a further 12 studies that were not identified in the search but met the inclusion criteria were subsequently added to the review. The largest number of studies evaluated the relationship between injuries and training load in rugby league players (n = 9) followed by cricket (n = 5), football (n = 3), Australian Football (n = 3), rugby union (n = 2),volleyball (n = 2), baseball (n = 2), water polo (n = 1), rowing (n = 1), basketball (n = 1), swimming (n = 1), middle-distance runners (n = 1) and various sports combined (n = 1). Moderate evidence for a significant relationship was observed between training loads and injury incidence in the majority of studies (n = 27, 93 %). In addition, moderate evidence exists for a significant relationship between training loads and illness incidence (n = 6, 75 %). Training loads were reported to have a protective effect against injury (n = 9, 31 %) and illness (n = 1, 13 %). The median (range) NOS score for injury and illness was 8 (5–9) and 6 (5–9), respectively.

LIMITATIONS: A limitation of this systematic review was the a priori search strategy. Twelve further studies were included that were not identified in the search strategy, thus potentially introducing bias. The quality assessment was completed by only one author.

CONCLUSIONS The results of this systematic review highlight that there is emerging moderate evidence for the relationship between the training load applied to an athlete and the occurrence of injury and illness. IMPLICATIONS: The training load applied to an athlete appears to be related to their risk of injury and/or illness. Sports science and medicine

professionals working with athletes should monitor this load and avoid acute spikes in loads. It is recommended that internal load as the product of the rate of perceived exertion (10-point modified Borg) and duration be used when determining injury risk in team-based sports. External loads measured as throw counts should also be monitored and collected across a season to determine injury risk in throwing populations. Global positioning system-derived distances should be utilised in team sports, and injury monitoring should occur for at least 4 weeks after spikes in loads.

## Grove, J. Robert, Luana C. Main, and Lucinda Sharp. "Stressors, recovery processes, and manifestations of training distress in dance." *Journal of Dance Medicine & Science* 17.2 (2013): 70-78.

ABSTRACT: Dancers are expected to maintain consistently high levels of performance capability and to perform on demand. To meet these expectations, they subject their bodies to long hours of intensive physical

training. Such training regimens are often combined with tight rehearsal and performance schedules, which over time can lead to persistent fatigue, psychological distress, performance decrements, and injury. A similar process has been observed as a consequence of high-intensity training in many different sports, and considerable sport-related research has been devoted to identifying the antecedents, the symptoms that are experienced, and the most cost-effective ways of monitoring symptom development. This paper presents a general heuristic framework for understanding this "training distress process" and discusses the framework with specific reference to dance.

#### Hoover, Donald L., William R. VanWye, and Lawrence W. Judge. "Periodization and physical therapy: Bridging the gap between training and rehabilitation." *Physical Therapy in Sport* 18 (2016): 1-20.

BACKGROUND: Exercise prescription and training progression for competitive athletes has evolved considerably in recent decades, as strength and conditioning coaches increasingly use periodization models to inform the development and implementation of training programs for their athletes. Similarly, exercise prescription and progression is a fundamental skill for sport physical therapists, and is necessary for balancing the physiological stresses of injury with an athlete's capacity for recovery. OBJECTIVE: This article will provide the sport physical therapist with an overview of periodization models and their application to rehabilitation. SUMMARY: In recent decades models for exercise prescription and progression also have evolved in theory and scope, contributing to improved rehabilitation for countless athletes, when compared to care offered to athletes of previous generations. Nonetheless, despite such advances, such models typically fail to fully bridge the gap between such rehabilitation schemes and the corresponding training models that coaches use to help athletes peak for competition. Greater knowledge of periodization models can help sport physical therapists in their evaluation, clinical reasoning skills, exercise progression, and goal setting for the sustained return of athletes to high level competition.

### Koutedakis, Yiannis. "Burnout in dance: The physiological viewpoint." *Journal of Dance Medicine & Science* 4 (2000): 122-127.

ABSTRACT: The ever-increasing demands for more and better performances have forced preparation for successful dance to become virtually a yearround endeavor. However, while better stage performances have indeed been achieved world-wide, an increased number of dancers also experience feelings of constant fatigue, frequent respiratory tract infections, and frequent injuries. These symptoms can inevitably affect an individual's ability to perform, while at the same time constitute part of the recently described "burnout" or "overtraining." The exact point where increased levels of exercise and training cause burnout or overtraining is difficult to define. Nevertheless, it is known that disproportional increases in either frequency or intensity of physical work, in conjunction with insufficient recovery, may overload the mechanisms of adaptation creating havoc in the muscle tissue, upsetting the body's immunity, and harassing the delicate balance of the hormonal system.

#### Liederbach, Marijeanne, Leigh Schanfein, and Ian J. Kremenic. "What is known about the effect of fatigue on injury occurrence among dancers?." *Journal of Dance Medicine & Science* 17.3 (2013): 101-108.

ABSTRACT: Fatigue is often thought of as any transient exercise-induced reduction of work capacity. In fact, it is a complex phenomenon caused by overlapping and interacting peripheral and central mechanisms. There is a known relationship between fatigue, diminished performance, and injury. This paper reviews what is currently known about fatigue in the current literature.

## Murgia, Carla. "Overuse, fatigue, and injury: neurological, psychological, physiological, and clinical aspects." *Journal of Dance Medicine & Science* 17.2 (2013): 51-51.

ABSTRACT: The training regimens of fully committed dancers remain fairly consistent year-round and are often combined with rehearsals and performances. Rarely will you find differences among off-season, pre-season, and in-season dance training schedules, as opposed to those of most other athletes, who subscribe to periodized training. This tends to provide little or no time for periods of rest and recovery, which are much needed for tissue repair and avoidance of injury. In addition, dancers at the pre-elite and elite levels operate with the knowledge that an injury may result in the loss of a role or position. Hence, they all too commonly condition, train, practice, and rehearse through injuries. The resulting combination of fatigue and compromised tissues can lead to performance decrements, psychological affects, and further injury. What the dancing population may not adequately understand is that fatigue and lack of rest for repair create optimal conditions for injury occurrence and recurrence.

#### Nordin-Bates, Sanna M., Thomas D. Raedeke, and Daniel J. Madigan. "Perfectionism, burnout, and motivation in dance: A replication and test of the 2× 2 model of perfectionism." *Journal of Dance Medicine & Science* (2017), in press.

ABSTRACT: The relationships between multidimensional perfectionism, burnout, and motivation were examined. In so doing, this study aimed to replicate and extend the study by Cumming and Duda (2012). Ninety-one ballet dancers completed questionnaires assessing the target constructs. Using cluster analysis, four profiles emerged that replicated Cumming and Duda's findings and generally supported Gaudreau and Thompson's (2010) 2x2 model of perfectionism. As such, these profiles represented pure personal standards perfectionism, mixed perfectionism, pure evaluative concerns perfectionism, and non-perfectionism. Extending previous literature, the four profiles were then compared on a range of burnout symptoms and motivational regulations. It was found that the four clusters differed significantly on these constructs, in a manner partly supportive of the hypotheses associated with the 2x2 model of perfectionism. In particular, our results reflect and extend those of Cumming and Duda, in that mixed perfectionism and pure evaluative concerns perfectionism did not differ on any of the measures. Thus, the higher personal standards of dancers exhibiting mixed perfectionism did not appear to be associated with better functioning than that experienced by dancers with pure evaluative concerns perfectionism. Altogether, the study extends our current understanding of perfectionism in dance and its potential effects, including those on burnout and motivation.

# Pasulka, Jacqueline, et al. "Specialization patterns across various youth sports and relationship to injury risk." *The Physician and Sports Medicine* (2017), http://dx.doi.org/10.1080/00913847.2017.1313007. Published online: 10 Apr 2017.

OBJECTIVES: Current trends among young athletes towards earlier specialization age and year-round training on multiple teams has raised concern for increased injury risk. Our previous analyses showed higher risk for injury in highly specialized young athletes. The goal of this research was to determine whether sports specialization and injury patterns vary by sports type.

METHODS: In this clinical case-control study, injured athletes (aged 7-18 years) were recruited from sports medicine clinics and compared to similarly aged uninjured athletes recruited from primary care clinics. Participants completed a survey reporting age, gender, sport type, specialization patterns, and details regarding sports-related injuries in the previous 6 months. Clinical diagnoses were collected from patients' medical records. Injuries were classified as acute, overuse, or serious overuse. RESULTS: Of 1,190 athletes enrolled, 26% (313) were single-sport specialized (reported participation in one sport and trained >8 months/year). Sports with the highest proportion of single-sport specialized athletes were tennis (46.7%), gymnastics (30.1%), and dance (26.3%). Single-sport specialized athletes in individual sports started specializing at a younger age  $(11.2 \pm 2.4 \text{ vs.} 12.0 \pm 2.7, \text{ p} = 0.05)$  and reported higher training volumes (11.8 vs. 10.3 h/week, p = 0.04) than those in team sports. Sports with the youngest specialization age were gymnastics  $(8.9 \pm 1.7)$ , dance  $(10.8 \pm 3.0)$ , and soccer  $(10.9 \pm 2.4)$ . Single-sport specialized athletes in individual sports accounted for a higher proportion of overuse injuries (44.3% vs 32.2%,

OR = 1.67, p = 0.037) and serious overuse injuries (23.4% vs 11.6%, OR = 2.38, p = 0.011), but a lower proportion of acute injuries (28.8% vs 13.8%, OR = 0.37, p = 0.001) compared to single-sport specialized athletes involved in team sports.

CONCLUSIONS: Athletes in individual sports may be more likely to specialize in a single sport than team sport athletes. Single-sport specialized athletes in individual sports also reported higher training volumes and greater rates of overuse injuries than single-sport specialized athletes in team sports.

#### Schwellnus, Martin, et al. "How much is too much?(Part 2) International Olympic Committee consensus statement on load in sport and risk of illness." *British Journal of Sports Medicine* 50.17 (2016): 1043-1052.

ABSTRACT: The modern-day athlete participating in elite sports is exposed to high training loads and increasingly saturated competition calendar. Emerging evidence indicates that inappropriate load management is a significant risk factor for acute illness and the overtraining syndrome. The IOC convened an expert group to review the scientific evidence for the relationship of load-including rapid changes in training and competition load, competition calendar congestion, psychological load and travel-and health outcomes in sport. This paper summarizes the results linking load to risk of illness and overtraining in athletes, and provides athletes, coaches and support staff with practical guidelines for appropriate load management to reduce the risk of illness and overtraining in sport. These include guidelines for prescription of training and competition load, as well as for monitoring of training, competition and psychological load, athlete well-being and illness. In the process, urgent research priorities were identified.

#### Soligard, Torbjørn, et al. "How much is too much? (Part 1) International Olympic Committee consensus statement on load in sport and risk of injury." *British Journal of Sports Medicine* 50.17 (2016): 1030-1041.

ABSTRACT: Athletes participating in elite sports are exposed to high training loads and increasingly saturated competition calendars. Emerging evidence indicates that poor load management is a major risk factor for injury. The International Olympic Committee convened an expert group to review the scientific evidence for the relationship of load (defined broadly to include rapid changes in training and competition load, competition calendar congestion, psychological load and travel) and health outcomes in sport. We summarize the results linking load to risk of injury in athletes, and provide athletes, coaches and support staff with practical guidelines to manage load in sport. This consensus statement includes guidelines for (1) prescription of training and competition load, as well as for (2) monitoring of training, competition and psychological load, athlete well-being and injury. In the process, we identified research priorities.

#### Windt, Johann, and Tim J. Gabbett. "How do training and competition workloads relate to injury? The workload—injury aetiology model." *British Journal of Sports Medicine* 51.5 (2017): 428-435.

ABSTRACT: Injury aetiology models that have evolved over the previous two decades highlight a number of factors which contribute to the causal mechanisms for athletic injuries. These models highlight the pathway to injury, including (1) internal risk factors (eg, age, neuromuscular control) which predispose athletes to injury, (2) exposure to external risk factors (eg, playing surface, equipment), and finally (3) an inciting event, wherein biomechanical breakdown and injury occurs. The most recent aetiological model proposed in 2007 was the first to detail the dynamic nature of injury risk, whereby participation may or may not result in injury, and participation itself alters injury risk through adaptation. However, although training and competition workloads are strongly associated with injury, existing aetiology models neither include them nor provide an explanation for how workloads alter injury risk. Therefore, we propose an updated injury aetiology model which includes the effects of workloads. Within this model, internal risk factors are differentiated into modifiable and non-modifiable factors, and workloads contribute to injury in three ways: (1) exposure to external risk factors and potential inciting events, (2) fatigue, or negative physiological effects, and (3) fitness, or positive physiological adaptations. Exposure is determined solely by total load, while positive and negative adaptations are controlled both by total workloads, as well as changes in load (eg, the acute:chronic workload ratio). Finally, we describe how this model explains the load-injury relationships for total workloads, acute:chronic workload ratios and the training load-injury paradox.

### Wyon, Matthew. "Preparing to perform periodization and dance." *Journal of Dance Medicine & Science* 14.2 (2010): 67-72.

ABSTRACT: This article reviews the historical and current literature on periodization in sport before applying the concept to dance from scientific and anecdotal points of view. Preparing the dancer through the use of a periodization model, in a professional or vocational setting, will potentially help prevent overtraining and its link to injury, while improving the dancer's readiness to perform optimally. Practical examples of tapering and periodization of training are discussed for companies and vocational schools.