

PASIG PERFORMING ARTS
SPECIAL INTEREST GROUP



ORTHOPAEDIC SECTION
AMERICAN PHYSICAL THERAPY ASSOCIATION



PASIG MONTHLY CITATION BLAST: No. 101

January 2015

Dear Performing Arts SIG members:

CSM 2015 is just around the corner!



CSM 2015 will be held next month (February 4-7, 2015) in Indianapolis, IN, at the Indiana Convention Center. We hope to see you there! <http://www.apta.org/csm/>

The Orthopaedic Section Performing Arts SIG is pleased to announce this year's PASIG speaker is Dr. Clare Frank, PT, DPT, OCS, FAAOMPT. Dr. Frank serves as a clinical instructor for both Spine & Sports Rehabilitation Fellowship programs at Kaiser Permanente, Los Angeles. She served on the injury prevention & rehab team for the National Training Center in Beijing, China (2010-2013) and the medical team for the 2009 World Figure Skating Championships held in Los Angeles. Dr. Frank is a certified instructor for Janda's Approach to Musculoskeletal Pain Syndromes, and Kolar's Approach to Dynamic Neuromuscular Stabilization.

Dr. Frank will speak on and demonstrate *Dynamic Neuromuscular Stabilization in Spinal Rehabilitation & Performance*. It will be an informative and helpful session, as Dr. Frank will teach clinically applicable use of Dynamic Neuromuscular Stabilization in evaluating and treating performing artists.

The above PASIG programming will be **Saturday, Feb 7, from 8-10 AM, in the Indiana Convention Center, Wabash Ballroom 1.**

Important note: Our Performing Arts SIG business meeting will be the same day, before the PASIG speaker, from 7-8 AM, in the Indiana Convention Center, Wabash Ballroom 1. All APTA members are welcome! This is a great opportunity to connect, meet others, investigate how you might become involved, and voice your ideas.

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:

Hallux Valgus in Dancers

Posterior ankle impingement

TMD in Musicians

Concussions

Bone Mineral Density in Dancers

Serratus Anterior Strengthening for Dancers

Focal Dystonia

Gymnastics: Update on Injuries and Movement Strategies

Dancers: Jumps, Landings, and Associated Injuries

Work-Related Injuries in Retired Dancers

Hip Labral Tears

If you are interested in contributing by writing a citation blast, contact Brooke Winder: BrookeRwinder@gmail.com

Current PASIG members: update your profile here:

https://www.orthopt.org/login.php?forward_url=/surveys/membership_directory.php

Performing Arts resources are available to members for free:

https://www.orthopt.org/content/special_interest_groups/performing_arts/pasig_resources

The resource pages full of art-specific information on

- Artist-specific Terminology (i.e., jumps, spins, instruments, turns)
- Genre Specific Terminology and Definitions
- Common Injuries
- Artist-specific Evaluations
- Performing Arts-specific Interventions
- Patterns of Regional Interdependence Association with Specific Injuries/Pathologies
- Return to Arts Progressions

Tweet Tweet! We have a Twitter page!

<https://twitter.com/PT4Performers>

Post your articles, 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>

If you are currently using a dancer screen, please contact Sarah Wenger, as she is seeking input on a single screen that she will make available to our members: Sbw28@drexel.edu

If you are seeking a more formal method of continuing education on performing artists, there is an independent study courses available through the APTA website: https://www.orthopt.org/content/c/20_3_physical_therapy_for_the_performing_artist

Last, the quarterly publication of Orthopaedic Practice Magazine is a fun and useful source of clinically relevant information in the form of case reports, case series, clinical pearls, and original research. Please consider submitting your case report or research on performing artists to the PASIG pages. If you are interested in submitting your writing, please contact Annette Karim: neoluvsonlyme@aol.com

Best regards,

Brooke

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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

Orthopaedic Section-American Physical Therapy Association,
Performing Arts SIG

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

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)



Bunions (Hallux Abducto Valgus) in Dancers

A bunion is more than a bump on the side of the great toe. It reflects changes in the bony alignment of the first metatarsal and proximal phalanx as well as adaptations of the soft tissue structures. There is great debate whether this structural abnormality can be acquired or whether genetic predisposition, such as foot type and hypermobility, must be present for formation. Footwear, such as pointe shoes or other shoes with a narrow box, may further encourage the abducted position and progress the deformity faster, resulting in more severe and earlier symptoms. This month's citation blast highlights research regarding the pathology, contributing factors, conservative treatment options, surgical interventions, outcomes of treatment, resulting alterations in lower extremity kinematics, and quality of life changes that occur with bunion progression. While this list of literature is not exhaustive, it is comprehensive in looking at important aspects to consider when treating a dancer with this condition.

Kelli Barton
3rd Year SPT
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Barouk LS. The Effect of Gastrocnemius Tightness on the Pathogenesis of Juvenile Hallux Valgus: A Preliminary Study. *Foot Ankle Clin.* Dec 2014;19(4):807-822.

Hallux valgus is the most common foot disorder associated with gastrocnemius tightness, and there is a particularly strong association with juvenile hallux valgus. This article describes an oblique windlass mechanism that can be a causative or a contributory factor in the pathogenesis of juvenile hallux valgus. This article presents a study of 108 patients who underwent a proximal gastrocnemius release and hallux valgus correction using a scarf osteotomy. We believe that assessment of gastrocnemius tightness in juvenile hallux valgus is important and that gastrocnemius lengthening should be routinely considered as part of the operative strategy.

Davenport KL, Simmel L, Kadel N. Hallux valgus in dancers: a closer look at dance technique and its impact on dancers' feet. *J Dance Med Sci.* 2014;18(2):86-92.

Hallux valgus is a common deformity of the forefoot. There is no doubt that some dancers develop hallux valgus, but the question remains as to whether dancers are at greater risk than the general population for developing this deformity. Review of the literature reveals on-going debate regarding risk factors for hallux valgus, which may include increasing age, female gender, genetic predisposition, constrictive shoe wear, first ray hypermobility, foot architecture, tight Achilles tendon, and first metatarsal length. There is insufficient evidence to demonstrate

conclusively that dancing, specifically pointe work, increases the prevalence or severity of hallux valgus; more research is needed. Treatment of hallux valgus in dancers should be conservative, with delay of surgical correction until retirement if possible.

Deschamps K, Birch I, Desloovere K, Matricali GA. The impact of hallux valgus on foot kinematics: a cross-sectional, comparative study. *Gait Posture*. May 2010;32(1):102-106.

Background: Hallux valgus is a very common foot deformity in modern societies. The impact of this condition on foot function has been described qualitatively and quantitatively. Published patho-mechanical models are mainly underpinned by findings originating from plantar pressure measurements. However, the kinematical patterns of the many foot segments during gait have not been quantified. This study aims to evaluate the kinematics of the various foot segments in the presence of this deformity.

Methods: Using the Oxford Foot Model and a 12-camera Motion Analysis System, gait analysis was conducted on a convenience sample of 20 participants with hallux valgus and compared to that of 22 randomly selected symptom-free volunteers. Differences between temporal and kinematical data between groups were analyzed using the unpaired parametric Student t-test (significance level $p < 0.01$).

Results: During specific gait events, a different range of motion was found at several inter-segment angles. Particularly, the range of motion of the hallux (sagittal plane) and hindfoot (frontal-transverse planes) during stance were significantly different ($p < 0.01$).

Conclusion: Sagittal plane kinematics of the hallux is affected by the first ray deformity in this condition. However, the impact on other segments was found to be limited. This suggests that the patho-mechanical consequences remain limited to the weight bearing function of the first ray.

du Plessis M, Zipfel B, Brantingham JW, et al. Manual and manipulative therapy compared to night splint for symptomatic hallux abducto valgus: an exploratory randomised clinical trial. *Foot (Edinb)*. Jun 2011;21(2):71-78.

Context: Hallux abducto valgus (HAV) is a frequent cause of great toe pain and disability, yet common treatments are only supported by mixed or equivocal research findings. Surgery often only provides modest improvement and post-surgery complications may significantly hamper outcomes, implying the need for trials testing conservative treatment, such as manual and manipulative therapy, particularly in cases where surgery may be contraindicated or premature. The purpose of this exploratory trial was to test an innovative protocol of manual and manipulative therapy (MMT) and compare it to standard care of a night splint(s) for symptomatic mild to moderate HAV, with a view gather insight into the effectiveness of MMT and inform the design of a definitive trial.

Design: Parallel-group randomised trial set in an out-patient teaching clinic.

Participants: A convenience sample of 75 patients was assessed for eligibility, with 30 participants (15 per group) being consented and randomly allocated to either

the control group (standard care with a night splint) or the experimental group (MMT).

Intervention: Participants in the control group used a night splint(s) and those in the experimental group (MMT) received a structured protocol of MMT, with the participants in the experimental group receiving 4 treatments over a 2-week period.

Outcome Measures: Visual analogue scale (HAV-related pain), foot function index (HAV-related disability) and hallux dorsiflexion (goniometry).

Results: There were no participant dropouts and no data was missing. There were no statistical ($p < 0.05$) or clinically meaningful differences (MCID $< 20\%$) between the two groups based on outcome measure scores. However, the outcome measure scores in the control group (night splint) regressed between the 1-week follow-up and 1-month follow-up, while the scores in the experimental group (MMT) were sustained up to the 1-month follow-up. The within-group data analysis produced statistically and clinically significant changes from baseline to the 1-week follow-up across all outcome measures. Post hoc power analysis and sample size calculations suggest that the average between group power of this trial was approximately 60% (ES = 0.33) and that a definitive trial would require a minimum of 102 participants per group ($N = 204$) to achieve satisfactory power of $\geq 80\%$.

Conclusions: The trend in results of this trial suggest that an innovative structured protocol of manual and manipulative therapy (experimental group) is equivalent to standard care of a night splint(s) (control group) for symptomatic mild to moderate HAV in the short term. The protocol of MMT maintains its treatment effect from 1-week to 1-month follow-up without further treatment, while patients receiving standard care seem to regress when not using the night splint. Insights from this study support further testing of MMT for symptomatic mild to moderate HAV, particularly where surgery is premature or where surgical outcomes may be equivocal, and serve to inform the design of a future definitive trial.

Hawson ST. Physical therapy post-hallux abducto valgus correction. *Clin Podiatr Med Surg.* Apr 2014;31(2):309-322.

This article discusses physical therapy considerations after hallux valgus correction. Hallux valgus is a fairly common occurrence, and corrective surgery is an option when conservative measures fail. Symptoms such as pain, swelling, and difficulty walking may persist after surgical correction of bunion deformity that addresses soft tissue and bone structure. Physical therapy is helpful after corrective hallux valgus surgery to address impairments and continued dysfunction and to improve overall patient outcome expectations. This article describes the benefits of a multifaceted physical therapy program after hallux valgus correction.

Kadel N. Foot and Ankle Problems in Dancers. *Phys Med Rehabil Clin N Am.* Nov 2014;25(4):829-844.

The dancer's foot and ankle are subjected to high forces and unusual stresses in training and performance. Injuries are common in dancers, and the foot and ankle are particularly vulnerable. Ankle sprains, ankle impingement syndromes, flexor hallucis longus tendonitis, cuboid subluxation, stress fractures, midfoot injuries,

heel pain, and first metatarsophalangeal joint problems including hallux valgus, hallux rigidus, and sesamoid injuries will be reviewed. This article will discuss these common foot and ankle problems in dancers and give typical clinical presentation and diagnostic and treatment recommendations.

Kennedy JG, Collumbier JA. Bunions in dancers. *Clin Sports Med.* Apr 2008;27(2):321-328.

Although dancers put a great deal of stress through the first metatarsophalangeal joint (MTPJ), it is unlikely that dancing causes bunions; however, such forces may produce an environment in which bunions may develop. It is best to employ conservative measures rather than surgical intervention in dancers who have a painful bunion. Any surgery on the first MTPJ will adversely affect dorsiflexion of this joint, which is a critical motion for dancers. Two types of bunions (slowly progressive and rapidly progressive) are commonly seen; arthritic bunions occur in dancers who have mild arthrosis and loss of cartilage on the head of the first MTPJ. Secondary problems arising from bunions include metatarsalgia, stress fractures, sesamoiditis, and flexor hallucis longus tendonitis.

Menz HB, Roddy E, Thomas E, Croft PR. Impact of hallux valgus severity on general and foot-specific health-related quality of life. *Arthritis Care Res (Hoboken).* Mar 2011;63(3):396-404.

Objective: To explore the prevalence of and factors associated with hallux valgus and to assess the impact of hallux valgus severity on general and foot-specific health-related quality of life (HRQOL) in older people.

Methods: People age ≥ 56 years who participated in the 6-year follow up of the North Staffordshire Osteoarthritis Project ($n = 2,831$) completed a survey that included the Medical Outcomes Study Short Form 36 (SF-36) health survey and the Manchester Foot Pain and Disability Index (FPDI). Self-reported hallux valgus severity was assessed using a validated instrument. Comparisons of SF-36 and FPDI scores were made across 5 severity grades of hallux valgus.

Results: Hallux valgus was present in 36.3% of the study population and was associated with female sex, older age, and pain in other bodily regions. There was a progressive reduction in all SF-36 component scores as the severity of hallux valgus increased; this association remained after adjusting for age, sex, education, and body mass index. The strength of these associations diminished after also adjusting for pain in the back, hip, knee, and foot, but hallux valgus severity remained significantly associated with reduced physical function, bodily pain, general health, social function, and mental health subscale scores. Among participants with foot pain, increasing hallux valgus severity was also significantly associated with greater impairment on the pain and function subscales of the FPDI after adjusting for age, sex, and body mass index.

Conclusion: There is a progressive reduction in both general and foot-specific HRQOL with increasing severity of hallux valgus deformity.

Nix SE, Vicenzino BT, Collins NJ, Smith MD. Characteristics of foot structure and footwear associated with hallux valgus: a systematic review. *Osteoarthritis Cartilage*. Oct 2012;20(10):1059-1074.

Objective: Factors associated with the development of hallux valgus (HV) are multifactorial and remain unclear. The objective of this systematic review and meta-analysis was to investigate characteristics of foot structure and footwear associated with HV.

Design: Electronic databases (Medline, Embase, and CINAHL) were searched to December 2010. Cross-sectional studies with a valid definition of HV and a non-HV comparison group were included. Two independent investigators quality rated all included papers. Effect sizes and 95% confidence intervals (CIs) were calculated (standardized mean differences (SMDs) for continuous data and risk ratios (RRs) for dichotomous data). Where studies were homogeneous, pooling of SMDs was conducted using random effects models.

Results: A total of 37 papers (34 unique studies) were quality rated. After exclusion of studies without reported measurement reliability for associated factors, data were extracted and analysed from 16 studies reporting results for 45 different factors. Significant factors included: greater first intermetatarsal angle (pooled SMD = 1.5, CI: 0.88–2.1), longer first metatarsal (pooled SMD = 1.0, CI: 0.48–1.6), round first metatarsal head (RR: 3.1–5.4), and lateral sesamoid displacement (RR: 5.1–5.5). Results for clinical factors (e.g., first ray mobility, pes planus, footwear) were less conclusive regarding their association with HV.

Conclusions: Although conclusions regarding causality cannot be made from cross-sectional studies, this systematic review highlights important factors to monitor in HV assessment and management. Further studies with rigorous methodology are warranted to investigate clinical factors associated with HV.

Reina M, Lafuente G, Munuera PV. Effect of custom-made foot orthoses in female hallux valgus after one-year follow up. *Prosthet Orthot Int*. Apr 2013;37(2):113-119.

Background: Subtalar joint hyperpronation plays a fundamental role in the development of hallux valgus (HV). Foot orthotics have been used to treat this condition and are aimed at preventing progression of the deformity.

Objectives: The aim of this study was to determine if the use of custom-made foot orthotics for 12 months prevented the advancement of HV in women.

Study Design: Prospective trial, using a repeated-measures design.

Methods: Fifty-four women with mild to moderate HV were divided into two groups: the experimental group used custom-made foot orthoses, and the control group used no treatment. First intermetatarsal (IMA) and hallux abductus (HAA) angles were measured at the beginning of the study and after 12-months follow up. Inter-group comparisons were made of these angles at both times of measurement, and intra-group comparisons between the two times of measurement.

Results: The initial HAA was similar in both groups (19.92 ± 4.25 degrees for the control group, 20.55 ± 5.10 degrees for the experimental group; $p = 0.392$), and also the IMA (10.56 ± 2.45 degrees for the control group, 10.86 ± 2.33 for the

experimental group; $p = 0.618$) There were no significant differences in the follow-up values of these angles ($p = 0.395$ and $p = 0.288$, respectively). There were no significant intra-group differences in the comparisons of the initial and follow-up angles

Conclusions: HV did not have a significantly slower evolution in participants of the experimental group compared with controls. Custom-made orthoses appear to have no effect in the evolution of mild and moderate HV during a 12 month period

Clinical Relevance: Subtalar joint hyperpronation plays a fundamental role in the development of hallux valgus. Conservative management typically involves the use of foot orthotics which is aimed at preventing the progress of the condition. The use of foot orthotics however should be used as a long term management strategy (beyond 12 months).

Schuh R, Hofstaetter SG, Adams SB, Jr., Pichler F, Kristen KH, Trnka HJ. Rehabilitation after hallux valgus surgery: importance of physical therapy to restore weight bearing of the first ray during the stance phase. *Phys Ther.* Sep 2009;89(9):934-945.

Background: Operative treatment of people with hallux valgus can yield favorable clinical and radiographic results. However, plantar pressure analysis has demonstrated that physiologic gait patterns are not restored after hallux valgus surgery.

Objective: The purpose of this study was to illustrate the changes of plantar pressure distribution during the stance phase of gait in patients who underwent hallux valgus surgery and received a multimodal rehabilitation program

Design: This was a prospective descriptive study.

Methods: Thirty patients who underwent Austin ($n=20$) and scarf ($n=10$) osteotomy for correction of mild to moderate hallux valgus deformity were included in this study. Four weeks postoperatively they received a multimodal rehabilitation program once per week for 4 to 6 weeks. Plantar pressure analysis was performed preoperatively and 4 weeks, 8 weeks, and 6 months postoperatively. In addition, range of motion of the first metatarsophalangeal joint was measured, and the American Orthopaedic Foot and Ankle Society (AOFAS) forefoot questionnaire was administered preoperatively and at 6 months after surgery.

Results: The mean AOFAS score significantly increased from 60.7 points ($SD=11.9$) preoperatively to 94.5 points ($SD=4.5$) 6 months after surgery. First metatarsophalangeal joint range of motion increased at 6 months postoperatively, with a significant increase in isolated dorsiflexion. In the first metatarsal head region, maximum force increased from 117.8 N to 126.4 N and the force-time integral increased from 37.9 N·s to 55.6 N·s between the preoperative and 6-month assessments. In the great toe region, maximum force increased from 66.1 N to 87.2 N and the force-time integral increased from 18.7 N·s to 24.2 N·s between the preoperative and 6-month assessments.

Limitations: A limitation of the study was the absence of a control group due to the descriptive nature of the study.

Conclusions: The results suggest that postoperative physical therapy and gait training may lead to improved function and weight bearing of the first ray after hallux valgus surgery.

Schuh R, Trnka H-J. Hallux Valgus - Distal Osteotomies. In: Bentley G, ed. *European Surgical Orthopaedics and Traumatology*: Springer Berlin Heidelberg; 2014:3417-3432.

Hallux valgus represents a common pathological condition of the foot and ankle. Modern concepts in the surgical treatment include metatarsal osteotomies. Based on the amount of deformity it can be classified in mild, moderate and severe hallux valgus. Mathematical analysis revealed that proximal osteotomies provide more angular correction than mid-shaft or distal osteotomies. Therefore, distal osteotomies are performed to correct mild to moderate deformities.

For pre-operative planning of the operation plain weight-bearing radiographs are necessary. The intermetatarsal angle (angle between the longitudinal axis of first and second metatarsal) measured on dorsoplantar x-rays determines the severity of deformity. An intermetatarsal angle of less than 15 degrees is considered as mild deformity, an intermetatarsal angle of 15–20 degrees as moderate and an angle of more than 20 degrees as severe deformity.

The distal Chevron osteotomy and its modifications are widely used methods for the correction of mild to moderate Hallux valgus deformity. It represents a subcapital V-shaped osteotomy with a distal apex. The Mitchell procedure is another subcapital corrective osteotomy. Recently, minimally-invasive methods like the method of Bsck have gained popularity. However, only few reports exist in the current literature concerning these methods.

Sufficient fixation is mandatory for distal osteotomies. Fixation methods include titanium screws, headless screws, bioabsorbable implants and wires. Complications of distal metatarsal osteotomies include avascular necrosis of the metatarsal head, malunion, recurrence, hallux varus, hardware failure, infection and wound healing problems. Postoperatively, patients are mobilised in forefoot relief shoes and patients should receive a multimodal rehabilitation program in order to improve functional outcome.

Shih KS, Chien HL, Lu TW, Chang CF, Kuo CC. Gait changes in individuals with bilateral hallux valgus reduce first metatarsophalangeal loading but increase knee abductor moments. *Gait Posture*. May 2014;40(1):38-42.

Hallux valgus (HV), one of the most common foot pathologies in modern society, affects not only the foot itself, but also the other lower limb joints. The purpose of the study was to investigate the kinematic and kinetic changes in the lower limb joints in patients with bilateral HV during level walking. Twelve female patients with bilateral HV and 12 healthy female controls walked while three-dimensional kinematic and kinetic data were measured. Patients with HV were found to shift their center of pressure (COP) laterally away from the 1st metatarsophalangeal

joint (MPJ), which helped unload the joint during late stance. The lateral shift of the COP in these patients was associated with the reduced toe-out angles of the foot as a result of increased internal rotation of the hip. However, this strategy increased the abductor moments at the knee, an index closely correlated with the medial load at the knee and a predictor of the onset and progression of medial OA. Early treatment of HV may be helpful not only for reducing foot pain and deformity, but also for preventing the potentially harmful loading at the knee, especially in those at risk of medial knee OA.

Steinberg N, Siev-Ner I, Zeev A, Dar G. The Association between Hallux Valgus and Proximal Joint Alignment in Young Female Dancers. *Int J Sports Med.* Aug 21 2014.

Very little is known about the relationship between proximal joint alignment and hallux valgus among young dancers. This study sought to determine the extent to which spinal and lower extremity alignments are involved in hallux valgus, and to identify predicting variables for its development in young dancers. A group of 1 336 young female dancers aged 8-16 years, and 226 control participants of the same age cohort were screened for the presence of hallux valgus, body physique characteristics, joint range of motion, and anatomical anomalies. Hallux valgus was common in the 2 young female populations studied. Among the dancers, 40.0% had bilateral hallux valgus and 7.3% unilateral. Among the controls, 32.3% had bilateral and 1.8% unilateral hallux valgus ($\chi^2=8.27$, $df=1$, $p=0.004$). Following logistic regression analysis, age (OR=1.028, 95% CI=0.968-1.091), genu varum (OR=1.514; CI=1.139-2.013) and scoliosis (OR=2.089; CI=1.113-3.921) were found to be significant predicting factors for hallux valgus in the dancer group, whereas in the control group, the predicting factors were age (OR=0.911, 95% CI=0.801-1.036) and ankle plantar flexion range of motion (OR=0.972; CI=0.951-0.992). In conclusion, it was found that spinal deformity, lower extremity alignment, and joint range of motion are strongly related to hallux valgus.

Wulker N, Mittag F. The treatment of hallux valgus. *Dtsch Arztebl Int.* Dec 2012;109(49):857-867; quiz 868.

Background: Hallux valgus is the commonest forefoot deformity, with an estimated prevalence of 23% to 35%. It causes symptoms on the medial edge of the foot, the sole, and the small toes. Non-operative treatment may alleviate symptoms but does not correct the deformity of the big toe. Surgery is indicated if the pain persists. The correct operation must be selected from a wide variety of available techniques.

Methods: In this article, we selectively review the pertinent literature, including the recommendations of medical societies in Germany and abroad, in the light of our own clinical experience.

Results: There have been many clinical trials of various treatments for hallux valgus, but very few of these were randomized, and the case numbers were generally small. Mild deformities are best treated by distal first metatarsal osteotomies, e.g. the Chevron osteotomy. Severe deformities require a soft-tissue

procedure at the first metatarsophalangeal joint and a proximal first metatarsal osteotomy. In case of osteoarthritis, and in elderly patients, a resection arthroplasty is preferred; arthrodesis is performed in physically active patients. After correction of hallux valgus, patients can usually bear their full weight on the treated foot while wearing a flat surgical shoe. Proper surgical treatment results in a good or very good outcome in 85% of patients and a satisfactory result in a further 10%.

Conclusion: The clinical outcome of present treatments seems to be good in most cases, but large-scale randomized trials are still needed to verify the efficacy of the wide variety of operations and fixation techniques that are currently being offered.

