ALTERNATIVELY SIZED PIANO KEYBOARDS

BIBLIOGRAPHY

History

Manchester, R. (2006). Musical instrument ergonomics (editorial). *Medical Problems of Performing Artists*, 21 (4), 157-158.

Parakilas, J. & others. (1999). *Piano Roles: Three Hundred Years of Life with the Piano*, Yale University Press, New Haven and London.

Sakai N. (2008) Keyboard span in old musical instruments. *Medical Problems of Performing Artists*, 23, (4), 16-171.

Experiences of pianists, attitudes and general articles

Booker, E. (2010). Pianos: One size fits all...big adults. *Tempo, Suzuki Talent Education Association of Australia (NSW) Inc., Autumn,* 8-9.

Boyle, R., & Boyle, R. (2009). Hand size and the piano keyboard. Literature review and a survey of the technical and musical benefits for pianists using reduced-size keyboards in North America. *Proceedings of the 9th Australasian Piano Pedagogy Conference, Sydney, Australia.* http://www.appca.com.au/proceedings/

Boyle, R. (2012). The experience of playing reduced-size piano keyboards. A survey of pianists. *MTNA e-Journal, April.*

Booker, E., & Boyle, R. (2011). Piano keyboards – one size does not fit all! Pianistic health for the next generation. *Proceedings of the 10th Australasian Piano Pedagogy Conference: Leading Notes to Effective Teaching: Resolving the past - Exploring the future.* Charles Sturt University, Wagga Wagga, 4-8 July 2011.http://www.appca.com.au/proceedings/

Boyle, R., Boyle, R., & Booker, E. (2017). Narrower Keyboards for Larger Hands. *Readers' Letters, Pianist*, UK, January.

Deahl, L. & Wristen, B. (2003). Strategies for small-handed pianists. *American Music Teacher*, *52* (6), 21-25.

Donison, C. (1998). Small hands? Try this keyboard, you'll like it. *Piano & Keyboard, July-August*, 41-43.

Donison, C. (2000). Hand size versus the standard piano keyboard. *Medical Problems of Performing Artists*, *15*, 111-114. http://chrisdonison.com/keyboard.html

Jutras, P. (2015). *Editorial, Clavier Companion,* Frances Clark Center for Keyboard Pedagogy, USA, September/October.

Leone, C. (2003). Goldilocks had a choice. *American Music Teacher, June-July,* 26-29. http://www.steinbuhler.com/GoldilocksFeature.pdf

Leone, C. (2015). Ergonomic Keyboards: Size does Matter. *Piano Professional*, EPTA (UK), Summer. http://www.carolleone.com/ergonomic-keyboards/

Leone, C. (2015). Size is Key. *Clavier Companion,* Frances Clark Center for Keyboard Pedagogy, USA, September/October.

Leone, C. (2016). Personal Touch. International Piano, UK, January-February 2017

McLachlan, M. (2010), Editorial, Piano Professional, EPTA (UK), Spring.

Son, Y., & Chesky, K. (2014). Awareness and attitude of professional keyboard players towards small size keyboards. *Poster paper presented at seminar, University of North Texas.*

Son, Y. (2018). Assessing perception and attitude of pianists toward ergonomically scaled piano keyboards (ESPK): Raising awareness about ESPK and evaluating changes of attitude through an educational survey. *DMA dissertation, University of North Texas*. https://digital.library.unt.edu/ark:/67531/metadc1248515/m1/1/

http://www.steinbuhler.com/html/our story.html

Hand spans of pianists

Boyle, R., Boyle, R. & Booker, E. (2015). Pianist Hand Spans: Gender and Ethnic Differences and Implications for Piano Playing, *Proceedings of the 12th Australasian Piano Pedagogy Conference, Beyond the Black and White, Melbourne, July 2015.* (http://www.appca.com.au/proceedings/)

http://www.nytimes.com/1995/11/23/garden/at-home-with-alicia-de-larrocha-a-pianissimo-star.html

Wagner, C.H. (1984). Success and failure in musical performance: Biomechanics of the hand. In Roehmann F.L., & Wilson F.R. (Eds): *The Biology of Music Making, Proceedings of the 1984 Denver Conference, St Louis, Missouri, MMB Music Inc.*,1988, 154-179.

Wagner, C.H. (1988). The pianist's hand: anthropometry and biomechanics. *Ergonomics 31*, 97-131.

Wagner, C.H. (2012). Musicians' hand problems: looking at individuality. *Medical Problems of Performing Artists*, 27, (2), 57-64.

For further information about Christoph Wagner's work, see: http://www.hand-und-instrument.de www.steinbuhler.com/http://www.steinbuhler.com/html/our research.html

Anthropometry

Donelson, S.M. & Gordon, C.C. (1996). 1995 Matched Anthropometric Database of US Marine Corps Personnel: Summary Statistics. http://www.humanics-es.com/ADA316646.pdf

Driscoll, T. & Ackermann, B. (2012). Applied musculoskeletal assessment: Results from a standardised physical assessment in a national population of professional orchestral musicians. *Rheumatology: Current Research, vol. S2, 1-7.* http://omicsonline.org/applied-musculoskeletal-assessment-results-from-a-standardised-physical-assessment-2161-1149.S2-005.pdf

Garrett, J.W. (1968). Clearance and Performance Values for the Bare-Handed and the Pressure-Gloved Operator. Report No. AMRL-TR-68-24, Aerospace Medical Research Laboratories, Wright-Patterson, AFB, Ohio, USA.

Garrett, J.W. (1971). The adult human hand: some anthropometric and biomechanical considerations. *Human Factors*, *13*, 117-131.

Greiner, T.M. (1991). *Hand Anthropometry of US Army Personnel. Technical Report. TR-92/011.* http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA244533

Mandahawi, N., Imrhan, S., Al-Shobaki, S., Sarder, B. (2008), Hand anthropometry survey for the Jordanian population. *International Journal of Industrial Ergonomics*, *38*, 966-976.

Matzdorff, I. (1968). Anthropometrische probleme in der industrie. *Internationale Zeitschrift für Angewandté Physiologie, Einschliesslich Arbeitsphysiologie*, *25*, 151-161.

Motmans, R. (2005). DINBelg, Ergonomie RC.

http://www.dinbelg.be/adultswomen.htm, http://www.dinbelg.be/adultsmen.htm

Nag, A., Nag, P.K., & Desai, H. (2003). Hand anthropometry of Indian women. *Indian Journal of Medical Research*, 117, 260-269.

Saengchaiya, N.& Bunterngchit, Y. (2004), Hand anthropometry of Thai female industrial workers. *The Journal of KMITNB, 14 (1),* 16-19. http://202.28.17.32/journal/212910255015423.pdf

http://www.roymech.co.uk/Useful_Tables/Human/Human_sizes.html

Hand size as a risk factor in pain and injury among pianists

Allsop, L., & Ackland, T. (2010). The prevalence of playing-related musculoskeletal disorders in relation to piano players' playing techniques and practising strategies. *Royal Northern College of Music, Music and Health, 3 (1),* 61-78.

Blackie, H., Stone, R., & Tiernan, A. (1999). An investigation of injury prevention among university piano students. *Medical Problems of Performing Artists, 14,* 141-149.

Boyle, R., & Boyle, R. (2009). Hand size and the piano keyboard. Literature review and a survey of the technical and musical benefits for pianists using reduced-size keyboards in North America. *Proceedings of the 9th Australasian Piano Pedagogy Conference: Expanding Musical Thinking. Sydney, Australia.* http://www.appca.com.au/2009proceedings.php

Bragge P., Bialocerkowski, A., & McMeeken, J. (2006). A systematic review of prevalence and risk factors associated with playing-related musculoskeletal disorders in pianists. *Occupational Medicine*, *56 (1)*, 18-27.

Bragge P., Bialocerkowski, A., Holtham, I., & McMeeken, J. (2006). Piano teachers' perceptions of risk factors associated with injuries in elite pianists. *Australian Journal of Music Education*, 1, 70-81.

Bragge P., Bialocerkowski, A., & McMeeken, J. (2006). Understanding playing-related musculoskeletal disorders in elite pianists. *Medical Problems of Performing Artists* 21 (2), 71-79.

Bruno, S., Lorusso, A., & L'Abbate, N. (2008). Playing-related musculoskeletal disorders in young and adult classical piano students. *International Archives of Occupational and Environmental Health*, *81 (7)*, 855-860.

Cayea, D., & Manchester, R. (1998). Instrument-specific rates of upper-extremity injuries in music students. *Medical Problems of Performing Artists*, 13 (1), 19-25.

Chesky, K., Yoshimura, E. & Furuya, S. (2007). Hand size and PRMDs in Japanese female pianists. (Letter to editor). *Medical Problems of Performing Artists*, 22 (1), 39-40.

Chorea, L.T., dos Santos, L.T., Paranhos, E.N.N., Albertini, A.I.M, Parreira, P.C.S and Nogueira, L.A.C.(2018). Prevalence and risk factors for musculoskeletal pain in keyboard musicians: A systematic review. *PM&R Journal*, *10*, 942-950.

De Smet, L., Ghyselen, H., & Lysens, R. (1998). Incidence of overuse syndromes of the upper limb in young pianists and its correlation with hand size, hypermobility and playing habits. *Chirurgie de la Main, 17 (4),* 309-313.

Farias, J., Ordonez, F.J., Rosety-Rodriguez, M., Carrasco, C., Ribelles, A., Rosety, M., Rosety, J.M., & Gomez del Valle, M. (2002). Anthropometrical analysis of the hand as a Repetitive Strain Injury (RSI) predictive method in pianists. *Italian Journal of Anatomy and Embryology, 107 (4)*, 225-231.

Fry, H.J.H. (1986). Prevalence of overuse (injury) syndrome in Australian music schools. *British Journal of Industrial Medicine*, *44*, 35-40.

- Furuya, S., Nakahara, H., Aoki, T., & Kinoshita, H. (2006). Prevalence and causal factors of playing-related musculoskeletal disorders of the upper extremity and trunk among Japanese pianists and piano students. *Medical Problems of Performing Artists*, *21* (3), 112-118.
- Kaufman-Cohen, Y., Portnoy, S., Sopher, R., Mashiach, L., Baruch-Halaf, L. & Ratzon, N. (2018). The correlation between upper extremity musculoskeletal symptoms and joint kinematics, playing habits and hand span during playing among piano students. *PLOS ONE 13 (12)*. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0208788
- Lai, K.-Y., Wu, S.-K., Jou, I. M., Hsu, H.-M., Chen Sea, M.-J., & Kuo, L.-C. (2015). Effects of hand span size and right-left hand side on the piano playing performances: Exploration of the potential risk factors with regard to piano-related musculoskeletal disorders. *International Journal of Industrial Ergonomics*, *50*, 97-104.
- Manchester, R.A., & Flieder, D. (1991). Further observations on the epidemiology of hand injuries in music students. *Medical Problems of Performing Artists, 6,* 11-14.
- Pak, C.H. & Chesky, K. (2001). Prevalence of hand, finger, and wrist musculoskeletal problems in keyboard instrumentalists. The University of North Texas Musician Health Survey. *Medical Problems of Performing Artists*, 16 (1), 17-23.
- Quarrier, N.F. (1995). Survey of music teachers: perceptions about music-related injuries. *Medical Problems of Performing Artists*, *10*, 106-110.
- Ranelli, S., Straker, L. & Smith, A. (2011). Playing-related musculoskeletal problems in children learning instrumental music. *Medical Problems of Performing Artists*, *26 (3)*, 123-139.
- Sakai, N. (1992). Hand pain related to keyboard techniques in pianists. *Medical Problems of Performing Artists*, *7*, 63-65.
- Sakai, N. (2002). Hand pain attributed to overuse among professional pianists: a study of 200 cases. *Medical Problems of Performing Artists*, 17(4), 178-180.
- Sakai, N., Liu, M., Su, F., Bishop, A. & An, K. (2006). Hand span and digital motion on the keyboard: concerns of overuse syndrome in musicians. *The Journal of Hand Surgery, 31 (5)*, 830-835.
- Sakai, N., & Shimawaki, S. (2010). Measurement of a number of indices of hand and movement angles in pianists with overuse disorders. *The Journal of Hand Surgery*, *35* (6), 494-8.
- Shields, N. & Dockrell, S. (2000). The prevalence of injuries among pianists in music schools in Ireland. *Medical Problems of Performing Artists, 15 (4),* 155-160.
- Wood, G.C. (2014). Prevalence, risk factors and effects of performance-related medical disorders (PRMD) among tertiary-trained jazz pianists in Australia and the United States. *Medical Problems of Performing Artists*, 29 (1), 37-45.
- Yoshimura, E., Paul, P.M., Aerts, C. & Chesky, K. (2006). Risk factors for piano-related pain among college students. *Medical Problems of Performing Artists*, 21 (3), 118-125.
- Yoshimura, E., Fjellman-Wiklund, RPT, Paul, P.M., Aerts, C. & Chesky, K. (2008). Risk factors for piano-related pain among piano teachers. *Medical Problems of Performing Artists*, 23 (3), 107-113.
- Zaza, C. & Farewell, V.T. (1997). Musicians' playing-related musculoskeletal disorders: an examination of risk factors. *American Journal of Industrial Medicine*, *32*, 292-300.
- Zaza, C. (1998). Playing-related musculoskeletal disorders in musicians: a systematic review of incidence and prevalence. *Canadian Medical Association Journal*, *158* (8), 1019-1025.

Ergonomics and biomechanics

Boyle, R. (2013). The benefits of reduced-size keyboards for smaller-handed pianists: An exploration of biomechanical and physiological factors. *Proceedings of the 11th Australasian Piano Pedagogy Conference: Opening Doors: The Complete Musician in a Digital Age. University of Southern Queensland*, Toowoomba, 2-6 July 2013. http://www.appca.com.au/proceedings/

Deahl, L. & Wristen, B. (2003). Strategies for small-handed pianists. *American Music Teacher, 52 (6)*, 21-25.

Grieco, A. Occhipinti, E., Colombini, D., Menoni, O., Bulgheroni, M. Frigo, C., & Boccardi, S. (1989). Muscular effort and musculoskeletal disorders in piano students: electromyographic, clinical and preventive aspects. *Ergonomics*, *32(7)*, 697-716.

Kochevitsky, G. (1967). The Art of Piano Plaving. Summy-Birchard Music Inc., USA.

Meinke, W.B. (1995). The work of piano virtuosity: An ergonomic analysis. *Medical Problems of Performing Artists*, *10* (2), 48-61.

Neuhaus, H. (1973). The Art of Piano Playing, Barrie & Jenkins, London.

Ortmann, O. (1929). *The Physiological Mechanics of Piano Technique*. Kegan Paul, Trench, Trubner & Co., London, and E.P. Dutton & Co., Inc., New York.

Wagner, C.H. (1984). Success and failure in musical performance: Biomechanics of the hand. In Roehmann F.L., & Wilson F.R. (Eds): *The Biology of Music Making, Proceedings of the 1984 Denver Conference*, St Louis, Missouri, MMB Music Inc., 1988, 154-179.

Wagner, C.H. (2012). Musicians' hand problems: looking at individuality. *Medical Problems of Performing Artists*, 27, (2), 57-64.

Wristen, B. (2000). Avoiding piano-related injury: a proposed theoretical procedure for biomechanical analysis of piano technique. *Medical Problems of Performing Artists, 15 (2),* 55-64.

Wristen, B. & Deahl, L. (2002). Small hands SOS! Circumventing injury and succeeding at the piano. *Music Teachers' National Association, Cincinnati, Ohio.* http://digitalcommons.unl.edu/musicpresentations/1/

Comparative studies using alternatively sized keyboards

Coates, S. (2017). Goldilocks and the Three Pianos – Ergonomics in Pianists. The Piano Teacher, November, Hal Leonard Australia.

Davis, P., & Evans, S. (2007). Pianists' adaptability to smaller keyboards. *Poster Paper Presented at the Music Teachers National Association 2007 National Conference, Chicago, Illinois.*

Wristen, B., Jung, M.C., Wismer, A.K.G., & Hallbeck, M.S. (2006). Assessment of muscle activity and joint angles in small-handed pianists. *Medical Problems of Performing Artists*, *21 (1)*, 3-9. http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1007&context=musicfacpub

Yoshimura, E. & Chesky, K. (2009). The application of an ergonomically modified keyboard to reduce piano-related pain. *MTNA e-Journal, November.* http://mtnaejournal.org/publication/?i=26940

Performance quality

Goebl, W. & Palmer, C.F. (2013). Temporal control and hand movement efficiency in skilled music performance. *PLOS ONE, 8 (1).*

www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0050901

Lee, S-H. (1990). Pianists' hand ergonomics and touch control. *Medical Problems of Performing Artists*, 5 (2), 72-78.

MacRitchie, J. (2015). The art and science behind piano touch: A review connecting multi-disciplinary literature. *Musicae Scientiae*, 19 (2), 171-190.

Websites and blogs

Small Piano keyboards: www.smallpianokeyboards.org

Japanese translation of this website: http://littlehands782.blogspot.jp/

Steinbuhler & Company, US manufacturer of acoustic piano keyboards with narrower keys: www.steinbuhler.com. The company was converted to a non-profit Foundation during 2018, called the DS Standard Foundation Inc. http://dsstandardfoundation.org/. On Facebook: www.facebook.com/dsstandardfoundation/.

Pianists for Alternatively Sized Keyboards (PASK): www.paskpiano.org and on Facebook: http://www.facebook.com/pask.piano.

Closed group: https://www.facebook.com/groups/PASK.Action/

YouTube channel: https://www.youtube.com/channel/UCdiQ0iwCWFsGjZ1QI41KSBg/playlists

Technicians for Alternatively Sized Keyboards: www.taskpiano.org
TASK Facebook pages: www.facebook.com/TASKPiano/
A closed group restricted to piano professionals: www.facebook.com/groups/TASKPiano/

Dr Carol Leone from Dallas, Texas – Chair of Keyboard Studies at SMU Meadows School of the Arts in Dallas: www.carolleone.com/ergonomic-keyboards/

Pianist Tiffany Goff, from Cleveland Ohio: www.skinnykeys.tumblr.com

A history of attempts to gain support for alternatively sized keyboards in Japan: http://littlehands782.blogspot.jp/2014/01/the-history-and-attitudes-to-smaller.html

Pianist Renata Bittencourt, from Paris, has a website (in French): http://www.lespetitsclaviers.sitew.fr/#ACCUEIL.A

Pianist Grace Choi has written this personal story: *Thoughts for Pianists with Small Hands: A Testimonial by Grace Choi.* It is the second blog on this page:

http://www.thehealthymusicianproject.com/blog

Jess Johnson, Professor of Piano and Piano Pedagogy at the University of Madison-Wisconsin: http://feelingthesound.org/2015/07/21/small-hands-big-heart/