

Prostate Cancer in Electric Guitar Players

To the Editor—Among the various risk factors for prostate cancer, the electromagnetic field (EMF) by which the electric guitar produces sound may pose a risk for electric guitar players. In addition, the acoustic features of the electric guitar may partly contribute to the underlying cause of prostate cancer among the guitarists. With the guitar held near the pelvic region of the guitarists, one may postulate that induction or progression of prostate cancer may occur by the potential carcinogenetic effects of both the EMF and loud noise from the electric guitar.

Although its etiology is largely unknown, various risk factors have been reported for prostate cancer.¹ Among these, exposure to EMF has been studied by many authors.² Furthermore, a wide variety of occupations have been associated with prostate cancer.¹ The electric guitar is gaining increasing popularity nowadays, and guitarists are at risk for a variety of disorders, such as skin diseases, musculoskeletal problems, and neurological impairments.³ The electric guitar utilizes the concept of Faraday's law as well as other concepts related to magnetism.⁴ The mechanism by which electric guitars create sound relies upon an EMF produced by the vibrating string in the guitar pickup. Since this type of guitar produces little sound without amplification, the players feed these to the amplifiers to produce loud sound.

A review of the obituaries cited in the archive of *The New York Times* revealed a remarkable number of jazz musicians and guitarists who died of prostate cancer.⁵ As an assumption, the acoustic features of the electric guitar may be proposed as a part of the underlying cause of prostate cancer among the guitarists, as it has been hypothesized that loud noise may be a cause of cancer.⁶ Visser and colleagues⁷ found an increased risk of prostate cancer among residents of an area surrounding the Amsterdam Airport, which may be potentially explained, at least partly, by the hypothesis of sonocarcinogenesis.⁶

During playing, the guitar is held in proximity of the pelvic region of the guitarists, and it is possible that the prostate gland could be affected by the potential carcinogenetic effects of both EMF and loud noise. Hence, one may hypothesize that induction or progression of prostate cancer may occur in electric guitar players by these mechanisms. This hypothesis proposes electric guitar playing as a potential occupational risk factor for the prostate cancer.

KAMYAR GHABILI, MD

MOHAMMADALI M. SHOJA, MD

ALI D. TABRIZI, MD

POOYA KAMRAN, MD

*Tabriz University of Medical Sciences, and Alzahra Hospital
Tabriz, Iran*

kghabili@gmail.com

1. Zeegers MP, Friesema IH, Goldbohm RA, van den Brandt PA: A prospective study of occupation and prostate cancer risk. *J Occup Environ Med* 2004;46:271–279.
2. Charles LE, Loomis D, Shy CM, et al: Electromagnetic fields, polychlorinated biphenyls, and prostate cancer mortality in electric utility workers. *Am J Epidemiol* 2003;157:683–691.
3. Gambichler T, Boms S, Freitag M: Contact dermatitis and other skin conditions in instrumental musicians. *BMC Dermatol* 2004;4:3.
4. Faraday's law of induction. Wikipedia, the free encyclopedia. http://en.wikipedia.org/wiki/Faraday's_law_of_induction; accessed 10 July 2007.
5. Obituaries. *The New York Times*. <http://www.nytimes.com/pages/obituaries/index.html>; accessed 10 July 2007.
6. Ghabili K, Shoja MM, Tubbs RS, et al: Sonocarcinogenesis: loud noise may cause malignant transformation of cells. *Med Hypoth* 2007 [in press]. doi: 10.1016/j.mehy.2007.02.029.
7. Visser O, van Wijnen JH, van Leeuwen FE: Incidence of cancer in the area around Amsterdam Airport Schiphol in 1988–2003: a population-based ecological study. *BMC Public Health* 2005;5:127.

Three-dimensional Analysis of Movements during Piano Playing

To the Editor—I read with great interest the article by Ferrario et al.,¹ reporting their findings from a study of pianists' hand and finger movements using three-dimensional motion capture in the March 2007 issue of this journal. The authors noted that most previous investigations of musicians' technique investigated only limited parts of the playing apparatus “without considering global movements.”

As further background to the protocol and methodology used in Ferrario et al.'s study, I would like to call attention to our pilot study, reported in this journal in March 2006.² A primary purpose of our study was to apply the research instrumentation also employed by Ferrario to the study of motions made by pianists and to assess the results. Our study also used three-dimensional motion capture technology and spherical reflective markers placed on the upper torso, upper limb (including the hand), and the three phalangeal segments of the second digit in both hands of the pianist to capture motion within all three spatial planes in real time. Like Ferrario et al.'s study, our study also employed six digital infrared-sensitive cameras; however, we employed a higher sampling rate of 120 Hz.

I am excited to see further development of this research protocol and look forward to additional biomechanical study of piano technique employing this methodology.

BRENDA WRISTEN, PHD

Piano Pedagogy and Keyboard Skills

University of Nebraska–Lincoln

Lincoln, NE

bwrستن2@unl.edu

1. Ferrario VF, Macri C, Biffi E, et al: Three-dimensional analysis of hand and finger movements during piano playing. *Med Probl Perform Art* 2007;22:18-23.
2. Wristen B, Evans S, Stergiou N: Sight-reading versus repertoire performance on the piano: a case study using high-speed motion analysis. *Med Probl Perform Art* 2006;21:10-16.

In reply—We read with pleasure the letter by Dr. Wristen and are grateful for her comments about our investigation. We regret that we did not come across Dr. Wristen and coworkers' study before. Indeed, their case study employed a motion analysis system very similar to the one used in our investigation.

Our study published in 2007 was an extension of a previous investigation by the same research group published in 2003.¹ We decided to use small retro-reflective markers (4 mm diameter) and thus limited the dimensions of our working volume (44 × 22 × 66 cm) to obtain adequate precision (actually, 0.018%). Unfortunately, Dr. Wristen and coworkers did not state the characteristics of their set: if looking at the picture, marker dimensions seem to be 10 to 20 mm, a

dimension suitable for total body assessments (as we did, for instance, in another study²).

We intend to continue our study of piano performance, both with more detailed analyses of finger motion and with assessments of other parts of the body. Thank you again for directing us to an interesting investigation, which will help us in the future development of our study.

CHIARELLA SFORZA, MD, PHD
*Laboratorio di Anatomia Funzionale dell'Apparato Locomotore
 Dipartimento di Morfologia Umana
 Università degli Studi di Milano
 Milano, Italy
 farc@unimi.it*

1. Sforza C, Macri C, Turci M, et al: Neuromuscular patterns of finger movements during piano playing: definition of an experimental protocol. *Ital J Anat Embryol* 2003;108:211-222.
2. Grassi G, Turci M, Shirai YF, et al: Body movements on the men's competitive mushroom: a three-dimensional analysis of circular swings. *Br J Sports Med* 2005;39:489-492.

ARTISTS: A Call for Papers

“A Day in the Life of . . .”

As part of our mission to improve our readers' understanding of the issues faced by artists, *MPPA* invites artists to consider writing a short paper for our journal.

A new feature has been created, entitled “A Day in the Life of . . .,” and the goal is to give an idea of the various stresses, particularly physical and psychological, that may be involved with an artist's line of work. Any strategies you have developed to deal with these problems or prevent problems from occurring also would be of interest to the readers. This helps us as health care providers to be better able to meet the needs of all working artists.

The article should be about 400-500 words in length and can include photographs that illustrate your working postures or conditions. Please also include a brief bio.

For further information, please contact: Bronwen Ackermann, PT, PhD, ackermann@netspeed.com.au.