

NJIT designer creates an ergonomic chair for musicians

June 12 2012

A chair to help musicians feel better and play better is the goal of David Brothers, assistant professor of interior design at NJIT's School of Art + Design. He has created a chair designed to reduce the back pain that is an occupational hazard to musicians who are required to sit for long periods, most often on a seat not designed for their needs. He said that his chair is designed to promote good playing posture and correct breathing techniques.

"It's well established among [musicians](#) that a good understanding of proper [posture](#) and breathing improve [sound quality](#) and are directly linked to exceptional instrument control and mastery," Brothers said. "What is less understood is the influence of chair design on the ability to achieve these goals."

Last winter, Brothers presented a paper on his research, "The Seated Musician: Furniture Design and its Effect on Performance and Health" at the Tenth Annual Hawaii International Conference on Arts & Humanities, and a poster, "Musician Chairs: An Ergonomic Design Perspective for Improved Health & Performance," more recently at the Society for the Arts in Healthcare Annual Conference in Detroit. He was also named a finalist in the International 2012 Spark Awards program celebrating design excellence and innovation for his chair design.

The office furniture industry has developed countless chairs that represent the latest understanding of designers, medical professionals, and ergonomic experts as how best to facilitate contemporary office

tasks while preventing health issues among workers who remain seated for extensive periods of time, said Brothers. Professional musicians are similarly expected to practice and perform while seated for prolonged time periods.

"But little attention has been paid to professional musicians," he said. "There are equally significant questions to address for the health and performance of people whose 'office' happens to be practice rooms and performance halls and whose sitting requirements, though distinctly different, are just as physically demanding as the contemporary knowledge worker."

One proposed chair solution designed by Brothers can be 'tuned' to the individual preferences and body characteristics of each musician to best support their instrument type and playing style. It features a seat that can be tilted forward to reduce the strain of the backward pelvic rotation, as well as adjustable seat height and backrests for proper lumbar support. The chair is flexible to allow for movement and its lightweight carbon fiber frame provides exceptional strength to absorb the dynamic stresses produced when musicians are actively engaged in performance.

Brothers based his design on 18 months of research, including interviews and surveys with professional musicians and observational studies of orchestra and ensemble groups. The study concentrated on the ergonomic issues of sitting for musicians playing strings, brass and woodwind instruments.

"As a furniture designer, I found it odd that performers from all three of those orchestral sections sat in identical chairs when what they are doing seems so fundamentally different," Brothers said. "The study addresses the question of whether the specific physical requirements of playing an instrument could lead to a unique chair design. I see this research as the beginning of a long-term effort to design, fabricate and test a series of

chairs with working musicians to assess the viability of the proposed strategies in a real-world application."

Brothers was interested in addressing the aesthetics of the chairs, although he didn't find much support in that area.

"Only a tiny percentage of musicians indicated that they cared about what their chairs looked like," he said. "As a designer who cares about my visual environment I found this surprising! Musicians buy the best instruments they can afford, wear nicely tailored, formal attire, and play in elegant venues that have been specifically designed to enhance the acoustics of the music. The only other visual variable is the chair they sit in and it is given little or no thought."

He said he conceived the chair as an extension of the instrument itself, as important as a chin rest or bow resin is for the violinist. His design aims to bring a 21st century spin to the traditional performance environment.

"The design of the chair is conceived as high-tech performance equipment-- like skis, tennis racquets, or racing bikes," he explained. "The black frame and leather upholstery resonate visually with the kinds of seats to which musicians are typically accustomed, but the triangular footprint, thin profile, and lightweight carbon fiber structure bring a contemporary aesthetic."

Provided by New Jersey Institute of Technology

Citation: NJIT designer creates an ergonomic chair for musicians (2012, June 12) retrieved 10 April 2024 from <https://phys.org/news/2012-06-njit-ergonomic-chair-musicians.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private

study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.