TBIS

Topic of the Speech:
Development And Performances Testing of Sitting Cushion
with Comfort Zone Partition Based on Setting Poster Analysis

Dr. Liya Zhou
College of Fashion and Design
Donghua University
China

Dr. Liya Zhou has obtained her doctoral degree in Textile Engineering from Donghua University in 2007. She studied and worked as a research assistant at the Hong Kong Polytechnic University from 2003 to 2006. From 2007 to 2009, she worked as a senior technical consultant and technician and later served as a project manager in textile department of SGS, Shanghai. From 2009 to now, she has been served as a lecturer and associate professor Donghua University.

Her research interest includes design and development of functional knitwear such as thermal and wet comfort; Subjective and objective evaluations and intelligent testing related to physiological comfort; textile quality control and testing; design and matching of knitted products; textile color matching and intelligent recommendation based on emotional intention.

Development and Performances Testing of Sitting Cushion with Comfort Zone Partition Based on Setting Poster Analysis

Liya Zhou[1,2] *, Jie Bao[1]

[1] *College of Fashion and Design, Donghua University, Shanghai, 200051, China*
[2] *Key Laboratory of Clothing Design & Technology（Donghua University）, Ministry of Education, Shanghai 200051, China*
*Presenter's email: zly@dhu.edu.cn

ABSTRACT (NO MORE THAN 500 WORDS:)

Long term improper sitting posture can cause bone damage and muscle fatigue in the human body, such as scoliosis, lumbar disc herniation, and lumbar muscle strain. Moreover, inappropriate seating equipment can also cause stress and discomfort in the human body, and even prolonged sitting can affect blood circulation. It may also cause thermal and wet discomfort between the seating equipment and the contact areas of the body, affecting normal work or learning efficiency and endangering human health.

This presented paper is based on the analysis of the spinal morphology, muscle activity, and pressure distribution characteristics of the human body under different sitting positions. It studies the characteristics of healthy sitting positions suitable for work and learning, and designs and develops seat cushions with pressure comfort and thermal and humidity comfort zones to improve comfort. Firstly, explore the characteristics and corresponding evaluation indicators of healthy sitting posture suitable for work and study states. Secondly, based on pressure distribution experiments, summarize the characteristics of pressure distribution under different sitting positions, and design pressure zones for seat cushions. And based on the thermal and humidity comfort evaluation indicators, the thermal and humidity zoning design of seat cushions is carried out. Finally, based on material selection and knitting technical design, the development and performance testing of seat cushions with comfort zone design were carried out.

This article obtains data on the spine, muscles, and pressure levels through systematic research on sitting posture, which can be used for intelligent recognition and classification of sitting posture in the future, providing relevant research foundations for machine vision analysis and motion capture analysis of sitting posture, and providing reference for other topics; The design and development of seat cushions with comfort zones have certain theoretical and practical significance for improving the quality and comfort of seat products, as well as for the development of new products.