Research on the Effect of Zonal Spring Mattress on Spine Alignment and Mattress Comfort

Yuding Zhu¹, Liming Shen², Fei Fang², Yun Zhu²
( 1 School of Engineering, Zhe Jiang Agriculture & Forestry University , Linan, China
2 College of Furniture and Industrial Design, Nanjing Forestry University, Nanjing, China )

Abstract

Introduction: As the increasing requirements of people for sleep, the zone pocket spring mattress which meet the ergonomics are more and more popular. In this paper, taking zonal spring mattress as the research object, the effect of spring mattress zonal changes on spine alignment and mattress comfort was studied.

Method: The subjects consisted of a sample of healthy women (n=5) and men (n=5) who were all students, aged from twenty to thirty. Experimental mattresses were a non-zonal spring mattress and three types of zonal spring mattresses, including three zonal, four zonal and five zonal spring mattresses. By use of the methods of mattress sinkage measurement, body pressure distribution test, subjective comfort evaluation and correlation analysis, zonal Spring Mattress were studied.

Results: The results showed that, the back and waist clearance of four types of spring mattresses was in the range of two to three centimeters, and the ratio of back to hip sinkage was in the range of 0.6 to 0.8. The back and hip sinkage ratio of men subjects in the four types of spring mattresses was larger than women subjects’. The back clearance of men subjects was larger than women subjects’ on zonal spring mattress, which had a certain relationship with male and female body shape.

Discussion: Reasonable zonal spring mattress could get better body pressure distribution parameters and subjective comfort evaluation than non-zonal spring mattress. More zonal number could live up to requirements of human body on mattress elasticity distribution. Research results provided the basis for zonal mattress design.

Keywords: Spring mattress, zonal mattress, comfort, spine alignment

References


