

RESEARCH REPORT POSTER DISPLAY

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RELATIONSHIPS BETWEEN BACKREST OF A CHAIR AND THE POSITION OF PELVIS ON THE ESTIMATED VALUE OF SHEAR STRESS.

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PURPOSE: The purpose of this study was to investigate the influence of relationship between the backrest of a chair and the position of pelvis on the peak load value at a part of the ischium and the shear stress in sitting on a chair, using an instrument to measure pressure distribution with an experiment model. **RELEVANCE:** The pressure for a long time and the shear stress are said to cause the bed sore. Therefore, from the clinical viewpoint of the bed sore prevention, it is very important to investigate the shear stress. **PARTICIPANTS:** Ten healthy male subjects (mean age 22.4 ± 2.3 years old) participated in the study. **METHODS:** We measured the peak load value in the standard sitting posture, with the knee and hip joints 90 degrees flexed, and in the comfortable sitting posture under the three conditions (in the standard position, the 5cm and the 10cm forward position) using an instrument to measure pressure distribution. In addition, we estimated the shear stress in sitting on a chair with an experiment model. **ANALYSIS:** We compared the peak load value at the ischium and the shear stress in the standard position and those in other two positions using the Wilcoxon signed-ranks test ($p < 0.05$). **RESULTS:** The results showed the peak load value to be significantly lower when the trunk of the body leaned against the chair's backrest of chair, and that it became lower when the pelvis was moved forward and the trunk leaned against the backrest. In addition, the estimated value of shear stress was 1.8 ± 0.7 kgf in the standard position, 2.2 ± 0.6 kgf in the 5cm forward position, and 2.2 ± 0.5 kgf in the 10cm forward position. **CONCLUSIONS:** The shear stress value was higher when the pelvis was moved forward. These results suggested that leaning the trunk of the body against a chair with the pelvis close to the backrest might be effective in preventing pressure ulcer, because the peak load value on the ischium and the shear stress were lower than they were in other positions. **IMPLICATIONS:** Leaning the trunk of the body against a chair with the pelvis close to the backrest might be effective in preventing pressure ulcer. **KEYWORDS:** sitting posture, measurement of pressure distribution, shear stress. **FUNDING ACKNOWLEDGEMENTS:** I acknowledge the funding sources of Kawasaki University of Medical Welfare. **CONTACT:** rptkob@mw.kawasaki-m.ac.jp