

Lumbar load during care-activities with patient transfer

Part 2: Measurement of exerted forces

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Abstract

The study ‘Determination of lumbar load in selected care-activities with patient transfer’ (Jäger et al., 2003) was performed to quantify lumbar load for patient handling ‘definitely being endangering’. The determination of the lumbar load is performed by biomechanical model calculation. It presupposes [a] knowledge on the posture of the nursing person, the methodology of which is shown in another paper in this issue (Jordan et al., 2003), and [b] knowledge on the forces exerted during the activity.

Introduction

The paper at hand describes essentially the methodology and instrumentation conditions for a systematic analysis of forces on the lumbar spine of nurses during patient transfer activities. Forces on the lumbar spine were chosen as an indicator of the biomechanical load since diseases of the musculoskeletal system and especially back problems represent main cause of absence from work. Furthermore as a part of the study ‘Determination of lumbar load in selected care-activities with patient transfer’ data for lumbar load during patient transfers will support occupational disease statement procedures and the derivation of measures for technical and occupational health prevention. The activities examined in this study were classified by the German Statutory Accident and Health Insurance Institution for Health Services and Welfare Care (Berufsgenossenschaft für Gesundheitsdienst und Wohlfahrtspflege BGW) as ‘definitely being endangering’ in the sense of the German occupational disease no. 2108 (Intervertebral disc related diseases of the lumbar spine caused by long-term lifting or carrying of heavy objects or caused by long-term activities in extremely trunk-flexed postures: BMA, 1992).

Method

Determining lumbar load during patient transfer activities in nursing presupposes the knowledge of the real body posture - the methodology of which is shown in an other paper in this issue (Jordan et al., 2003) - and the knowledge on the handforces exerted during the activity of the nursing person. The forces applied by the nurse during patient transfers were determined regarding level, direction, and point of