Palmer KE, Griffin M, et al. Professional driving and prolapsed lumbar intervertebral disc diagnosed by magnetic resonance imaging—a case-control study. Scand J Work Environ Health 2012;38(6):577-581.

Design: Case-control study

Population/sample size/setting:

- 237 cases of LBP and 820 controls, all referred to the radiology department from the same catchment area of the National Health Service in Southampton, UK
- Imaging done for trauma or for non-mechanical pathology (tumor, infection, metabolic bone disease) was excluded

Main outcomes:

- Cases had been referred for imaging because of LBP; controls had been referred for other reasons (predominately ankle/foot, lower limb above ankle, or wrist/hand
- Cases, but not controls, were asked about their history of LBP, and their disability was assessed with the Roland-Morris questionnaire
- Numerous other variables were measured in both cases and controls, with work-related variables such as the amount of driving and the characteristics of the vehicle engines
- Among the 237 cases, 176 were classified as having disc herniation and/or nerve root compression on the MRI; 61 cases were classified as not having disc herniation and/or nerve root compression on MRI
- The cases with and without MRI evidence of nerve root compression were compared on several exposures related to professional driving
    - There were no differences between LBP cases with and without MRI abnormalities on how many of them drove more than one hour per day, how many drove more than 3 hours per day, or how many hours they drove in a week (both for the vehicle they drove most often and for hours driven in all vehicles)
    - A comparison was also made for whole body vibration (WBV), but the data were derived from self-reported driving times and from imputed vibration for the vehicles (imputed vibration data are in an internet link which is no longer operative)

Authors' conclusions:

- There were no important associations between WBV and LBP but there were associations between LBP and psychosocial risk factors
- The hypothesis that WBV causes LBP is compatible with the broad literature on drivers' symptoms, and it is possible that WBV causes other degenerative disc pathology
    - It may be that prolonged sitting associated with professional driving increases the risk of LBP

Comments:

- The lack of information about LBP in the controls makes the study uninterpretable, since LBP is such a common symptom in the general population, and is likely to have been present in the controls as well as in the cases
- The comparison of WBV in LBP patients with and without MRI findings of disc prolapse produces consistent values of equal odds, and supports the hypothesis that WBV is not importantly associated with disc prolapse or nerve impingement
- WBV exposure measurements are susceptible to misclassification due to their imprecision and derivation from self-report
    - The consequences of misclassification would bias the results toward the null if the misclassification is non-differential, but when exposure is self-reported, truly non-differential misclassification cannot be assumed

Assessment: Inadequate for association of whole body vibration and LBP (assumes that controls were free of LBP without asking them); adequate for some evidence that WBV has no important association with disc pathology in the lumbar spine in professional drivers

Reference: Palmer KE, Harris EC, et al. Case-control study of low-back pain presenting for MRI, with special relation to whole-body vibration. Scand J Work Environ Health. 2008; 34:364–73.