Int Arch Occup Environ Health (2012) 85:333–334
DOI 10.1007/s00420-011-0669-9

LETTER TO THE EDITOR

Tendon lesions in the shoulder: tear and wear without push and pull?

P. P. F. M. Kuijer · M. J. M. Hoozemans · M. H. W. Frings-Dresen

Received: 21 April 2011 / Accepted: 8 June 2011 / Published online: 22 June 2011

First of all, we would like to complement Siedler and his colleagues for their innovative case–control study in patients with clinically established tendon lesions of the m. supraspinatus in order to verify a pathological dose–response relation for work-related risk factors of shoulder complaints, taking into account personal and sport-related confounders (Seidler et al. 2011).

We were surprised to read that lifting and carrying was considered as a potential risk factor or confounder and *not pushing and pulling*. As far as we know, there is no epidemiological evidence for an association between lifting and carrying and shoulder symptoms. However, several studies reported significant associations between *pushing and pulling* and *shoulder symptoms* (Van der Beek et al. 1993; Hughes et al. 1997; Hoozemans et al. 2002a, b; Harkeness et al. 2003; Smedley et al. 2003). Not taking into account pushing and pulling as a potential risk factor or confounder may partly explain the observed differences in odds ratio's (ORs) between exposure in terms of occupational groups (Table 2; Seidler et al. 2011) and in terms of strenuous activities (Table 3; Seidler et al. 2011). For instance, for construction workers, packers and physically exposed service workers (f.i. nurses and refuse collectors), Seidler et al. (2011) observed significant adjusted ORs of 2.5, 5.0 and 1.9, respectively. These ORs are somewhat higher than for lifting and carrying, which may be caused by the fact that jobs that consist of manual materials handling often include pushing and pulling besides lifting and carrying (Baril-Gingras and Lortie 1995). For comparable jobs, Hoozemans et al. (2002a) reported significant prevalence rate ratios (PRRs) for shoulder symptoms between 2.2 and 4.9 for self-reported and observed exposure to pushing and pulling in their 1-year prospective cohort study among 829 workers. In this study, the PRRs were adjusted for working above shoulder level and lifting and carrying. These findings are supported by biomechanical studies on contact forces at the glenohumeral joint in jobs like service workers in distribution (Hoozemans et al. 2004) and refuse collectors (Kuijer et al. 2003). Therefore, we strongly recommend taking into account pushing and pulling when evaluating manual materials handling, especially in relation to shoulder symptoms (Kuijer et al. 2007).

P. P. F. M. Kuijer (✉) · M. H. W. Frings-Dresen
Coronel Institute of Occupational Health, Netherlands Center for Occupational Diseases, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands
e-mail: p.p.kuijer@amc.uva.nl

M. J. M. Hoozemans
Faculty of Human Movement Sciences, Research Institute MOVE, VU University, Amsterdam, The Netherlands

References

Baril-Gingras G, Lortie M (1995) The handling of objects other than boxes: univariate analysis of handling techniques in a large transport company. Ergonomics 38:905–925

Harkeness EF, Macfarlane GJ, Nahit ES, Silman AJ, McBeth J (2003) Mechanical and psychosocial factors predict new onset shoulder pain: a prospective cohort study of newly employed workers. Occup Environ Med 60:850–857

Hoozemans MJ, van der Beek AJ, Fring-Dresen MH, van der Woude LHV, van Dijk FJ (2002a) Low-back and shoulder complaints among workers with pushing and pulling tasks. Scand. J Work Environ Health 28(5):293–303

Hoozemans MJ, van der Beek AJ, Frings-Dresen MH, van der Woude LHV, van Dijk FJ (2002b) Pushing and pulling in association

with low back and shoulder complaints. Occup Environ Med 59(10):696–702

Hoozemans MJ, Kuijer PP, Kingma I et al (2004) Mechanical loading of the low back and shoulders during pushing and pulling activities. Ergonomics 47(1):1–18

Hughes RE, Silverstein BA, Evanoff BA (1997) Risk factors for work-related musculoskeletal disorders in an aluminum smelter. Am J Ind Med 32:66–75

Kuijer PP, Hoozemans MJ, Kingma I et al (2003) Effect of a redesigned two-wheeled container for refuse collecting on mechanical loading of low back and shoulders. Ergonomics 46(6):543–560

Kuijer PP, Hoozemans MJ, Frings-Dresen MH (2007) A different approach for the ergonomic evaluation of pushing and pulling in practice. Int J Ind Ergo 37:855–862

Seidler A, Bolm-Audorff U, Petereit-Haack G et al. (2011) Work-related lesions of the supraspinatus tendon: a case-control study. Int Arch Occup Environ Health 84(4):425–433

Smedley J, Inskip H, Trevelyan F, Buckle P, Cooper C, Coggon D (2003) Risk factors for incident neck and shoulder pain in hospital nurses. Occup Environ Med 60(11):864–869

Van der Beek AJ, Frings-Dresen MHW, Van Dijk FJH, Kemper HCG, Meijman TF (1993) Loading and unloading by lorry drivers and musculoskeletal complaints. Int J Ind Ergo 12:13–23