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What do physiotherapists and manual handling advisors consider the safest lifting posture, and do back beliefs influence their choice?

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ABSTRACT

Background: It is commonly believed lifting is dangerous and the back should be straight during lifting. These beliefs may arise from healthcare professionals, yet no study has evaluated the lifting and back beliefs of manual handling advisors (MHAs) and physiotherapists (PTs).
Objectives: To evaluate (i) what lifting technique MHAs and PTs perceive as safest, and why, and (ii) the back pain beliefs of MHAs and PTs.
Design: Data was collected via an electronic survey.
Method: Participants selected the safest lifting posture from four options: two with a straight back and two with a more rounded back, with justification. Back beliefs were collected via the Back-Pain Attitudes Questionnaire (Back-PAQ). Relationships were investigated using multiple linear and logistic regression models.
Results: 400 PTs and MHAs completed the survey. 75% of PTs and 91% of MHAs chose a straight lifting posture as safest, mostly on the basis that it avoided rounding of the back. MHAs scored significantly higher than PTs on the Back-PAQ instrument (mean difference = 33.9), indicating more negative back beliefs. Those who chose the straight back position had significantly more negative back beliefs (mean 81.9, SD 22.7) than those who chose a round back lift (mean 61.7, SD 21.1).
Conclusion: Avoiding rounding the back while lifting is a common belief in PTs and MHAs, despite the lack of evidence that any specific spinal posture is a risk factor for low back pain. MHAs, and those who perceived a straight back position as safest, had significantly more negative back beliefs.

1. Introduction

Low back pain (LBP) is a large and growing issue in Western societies (Deyo et al., 2009), and work absence due to back pain is socially and economically expensive (Maniadakis and Gray, 2000). The reasons for this increasing problem are much debated, but what is clear is that LBP, especially when it persists, is a complex disorder driven by a number of factors across a wide biopsychosocial spectrum (Pransky et al., 2011). In this regard, while there is evidence that physical demands of work are associated with LBP, they only account for a modest proportion of LBP in the workforce (Waddell and Burton, 2001).

In the prevention of LBP, employers commonly use manual handling training for their staff. This training often involves teaching people how to lift, as lifting is the main way of loading the spine and is often cited as provocative in those with LBP (Coenen et al., 2014). However, the evidence that lifting is a risk factor for LBP is debatable. Cumulative back loading has been associated with LBP (Coenen et al., 2013), yet there is no proven causal link between lifting and LBP (Wai et al., 2010a). In fact, mechanical loading parameters in general have not been shown to be independently causative of LBP (Roffey et al. 2010a, 2010b, 2010c, 2010d, 2010e; Wai et al., 2010b, 2010c). More specifically, there is no *in vivo* evidence that lifting with a round back is a predictor for LBP, nor that lifting with a straight back is safer, despite this being a widely held belief. This may help to explain why teaching people how to lift has not been shown to be effective in preventing LBP (Hignett, 2003; Maher, 2000; Bos et al., 2006; Martimo et al., 2008).

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Back beliefs that are consistently held in those with LBP are that their spine is a vulnerable structure that is easily injured and in need of protection (Darlow et al., 2015). These beliefs have, in part, been shown to come from their treating healthcare professional (Darlow et al., 2013), and clinicians' beliefs affects their clinical management (Daykin and Richardson, 2004). To date, the back pain beliefs of MHAs have not been assessed, an important consideration as they advise others regarding the risks of LBP.

There is an emerging view that advice to protect the back may not always be helpful in the treatment of LBP (O'Sullivan et al., 2016) and, in fact, may fuel a cycle of negative beliefs and thoughts leading to fear and protective behaviours that maintain the disorder (O'Sullivan, 2005). For example, it has been shown that those with LBP lift cautiously; they move slower when they bend, bend their back less, and co-activate the muscles supporting the spine – thereby bracing themselves (Ferguson et al., 2004; Rudy et al., 2003; Slaboda et al., 2008). This way of movement is less efficient and linked to greater spinal loading which may be pro-nociceptive (Marras et al., 2001). This cautious way of lifting also reflects commonly taught lifting strategies, where individuals are advised to keep the back straight and bend their knees. The theory that squat lifting in this manner is the safest way to lift comes from *in vitro* data suggesting that it is harder to injure certain elements of the spine when the natural lordotic curve of the spine is maintained, and bending is avoided (Callaghan and McGill, 2001). However, this has not been confirmed *in-vivo* (Dreischarf et al., 2016; Kingma et al., 2010). Indeed, lifting with a round back has actually been shown to be more efficient (Holder, 2013). It is plausible that teaching those with back pain to keep their back straight when they lift and the belief that the spine is vulnerable may in fact be unhelpful.

To date little is known about the beliefs of PTs and MHAs regarding lifting. O'Sullivan et al. (2012) showed that physiotherapists tended to prefer more upright sitting postures over flexed postures as best for the back and choosing this posture was associated with more negative beliefs about back pain. We hypothesise the same relationship will be observed for lifting, where those with more negative attitudes about back pain will believe straight back lifting is safest, and this will be associated with more negative back beliefs.

The aims of this study are therefore:

1. To determine which lifting posture PTs and MHAs think is the safest, and why.
2. To investigate factors (e.g. profession, sex, experience) associated with lifting posture beliefs.
3. To investigate factors associated with back pain beliefs.
4. To investigate the relationship between lifting posture beliefs and back pain beliefs.

2. Methods

2.1. Participants

Participants, either MHAs or PTs, were recruited in three ways: (i) using an email sent to all members of the National Back Exchange – an association set up to promote evidence-based practice among manual handling advisors; (ii) by advertisements placed on the Chartered Society of Physiotherapy web page; and (iii) via dissemination of Twitter links to the study. Those who did not work with individuals with back pain were asked not to participate.

2.2. Generating photographs

After consultation with professional colleagues, four sample lifting postures were chosen (Fig. 1). These reflected common lifting techniques. A 37-year-old male with no history of LBP and adequate flexibility to assume these postures was used as a model.

Lift a)

Lift b)

Lift c)

Lift d)

Fig. 1. Four lifting postures: a and d straight back, and b and c round back.