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Author's reply to Coggon commentary on epidemiological investigation of prognosis

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We recently presented the results of a systematic review on common prognostic factors for work disability in employees with a chronic somatic disease (1). In this review, we used the results of prospective and retrospective studies, preferably based on a multivariate analysis. We would like to thank Dr Coggon (2) for his extensive comment on the methodology used in our review.

One central point in Dr Coggon's comment is that aetiological research aims to estimate the causal impact of risk factors, but that – in prognostic research – “causation and confounding are irrelevant”. In his opinion, “it does not matter why a [prognostic] risk factor is related to an outcome”. Dr Coggon argues that any factor that shows a strong association with the outcome is relevant as it can be used in risk modeling and to recognize workers at risk in order to select them for preventive interventions. Non-causal factors that show a strong association might be more important than causal factors that show only little difference in the probability that the outcome will occur.

We agree that it is possible, at least in theory, to use non-causal factors associated with work disability or another outcome for early recognition of risk groups. But there might be serious problems for the reader of a scientific article who wants to work in an evidence-based manner, since non-causal factors might be only relevant in a specific country or industry. For example, suppose that studies from Silicon Valley consequently show that employees who wear T-shirts at work are more at risk of repetitive strain injuries than those who wear ties. Then, T-shirts might be a strong sign of risk in the American Information Communication Technology (ICT) industry in that region. However, it is doubtful whether this factor is relevant for all American industries and regions, or for workers in Japan and other countries where the clothing habits are more formal. So, it is relevant to know that wearing T-shirts is not a real cause of repetitive strain injuries, but that a non-causal association occurs in the specific setting of Silicon Valley where many ICT workers dress informally, although this may not be appropriate for their colleagues in the sales department.

It is, therefore, indeed relevant to pay attention to causation and confounding in reviews on common prognostic factors for work-related outcomes to preclude misinterpretation and stimulate appropriate application of study results in practice. Non-causal factors might be relevant, but only when they are “common” in the

sense that they are meaningful in most industries and countries. However, that is not always the case.

Others agree with our approach. Several articles on the quality of reporting observational longitudinal research have reported the control of confounding as a quality criterion for observational longitudinal research (3–6). The Dutch Cochrane Centre of Cochrane Collaboration, which produces and disseminates systematic reviews of healthcare interventions, also supports this method (www.cochrane.org/docs/descrip.htm). Confounding can result in under- or overestimation of the association between a prognostic risk factor and the outcome. It can even change the direction of the observed effect, resulting in a harmful prognostic factor appearing to be protective or vice versa. Not controlling for confounders in prognostic studies can be misleading for the user of the study who is required to apply meaningful study results in practice.

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