Appendix 5. Directed acyclic graphs (DAG) describing the potential causal pathways of occupational and leisure-time physical activity with all-cause mortality. Based on these DAGs, analyses were done with several levels of adjustment.

We drew an initial DAG describing the association of occupational physical activity and all-cause mortality (Figure 1), to derive the causal association of occupational physical activity and all-cause mortality. Based on this DAG it appears to be relevant to adjust for education, age, gender, lifestyle factors (including leisure-time physical activity) and health outcomes. Variables that could also be relevant to adjust for, such as occupation and work characteristics were, however, unfortunately not available in the database (grey dots).

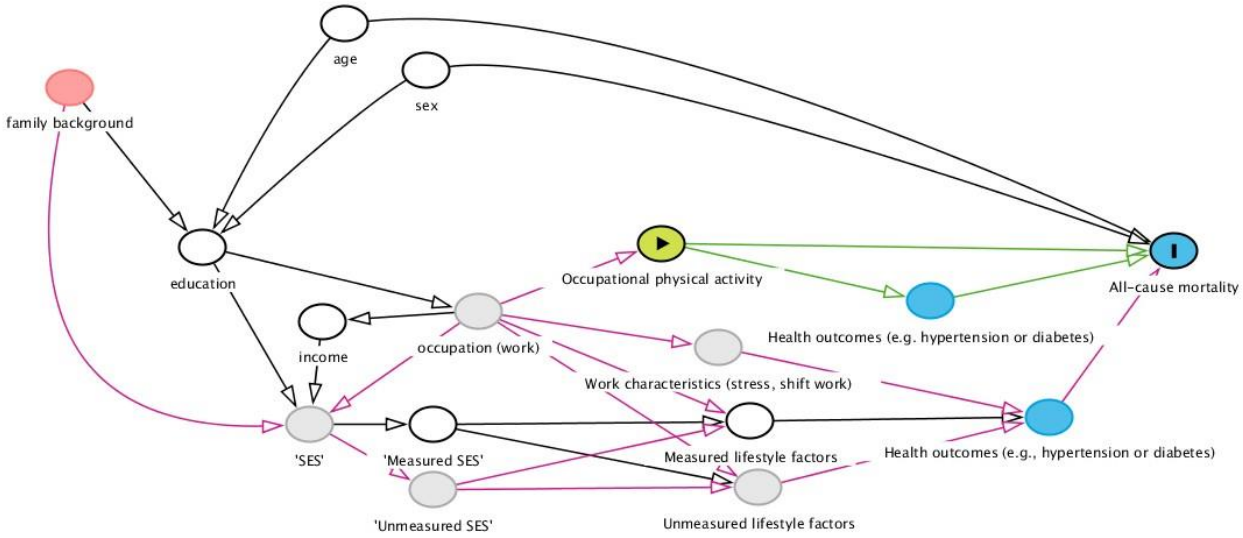

Figure 1. Initial DAG describing the association of occupational physical activity and all-cause mortality.

It may not be needed (or could even lead to bias) to adjust for income because income can be considered a mediator in that being or not being able to work in a physically demanding job over time may likely impact income (Figure 2). The other way around (i.e., income leading to a job with a certain degree of occupational physical activity) is less likely, but is conceivable. To add to the complexity, the variable income in our dataset consists of a combination of household and individual income.

Also lifestyle factors can be considered a mediator; e.g. one's occupational physical activity level could influence one's leisure-time physical activity level since engagement in high levels of occupational physical activity could, due to fatigue, prevent workers from engaging in leisure-time physical activity (Figure 3). As shown in Figure 4, a last option is that both income and lifestyle factors can be on the directed path between occupational physical activity and all-cause mortality, in which case one should not adjust for them.

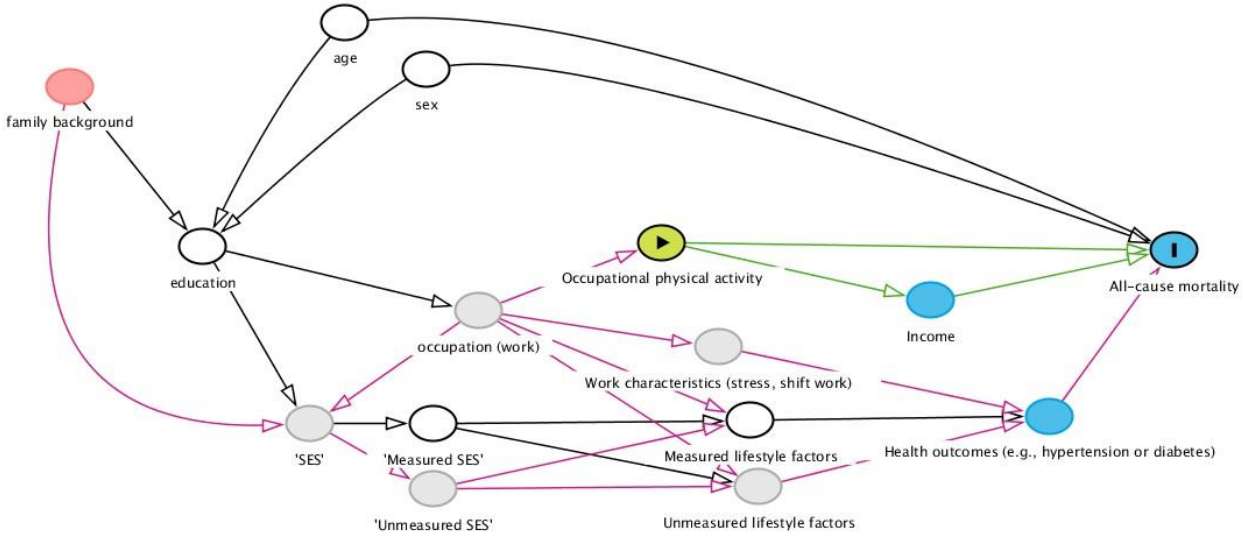

Figure 2. DAG describing the association of occupational physical activity and all-cause mortality with income being a potential mediator.

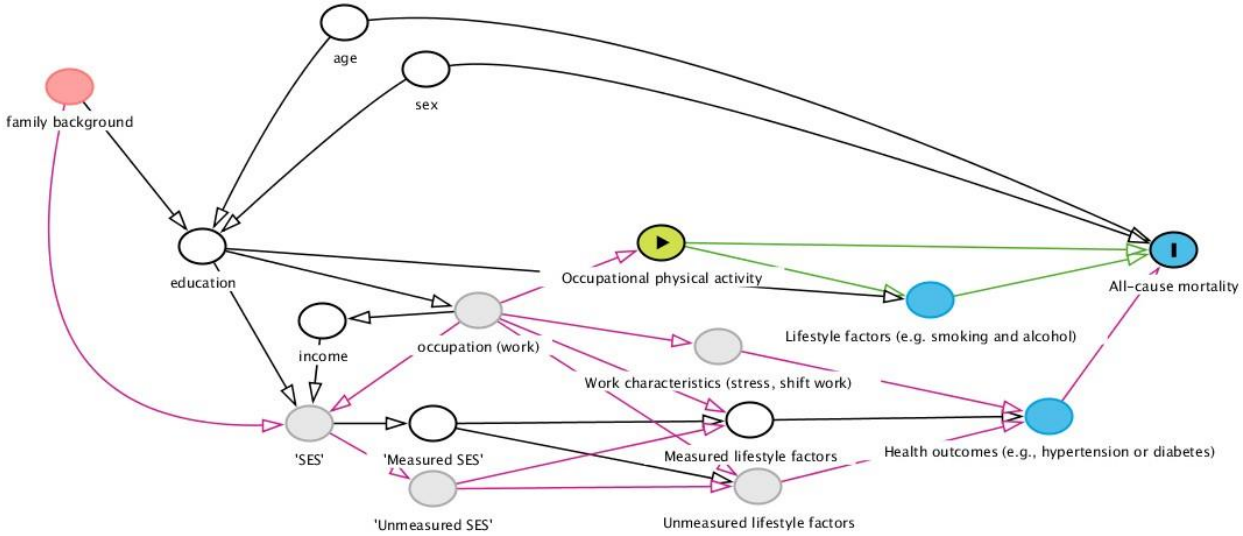

Figure 3. DAG describing the association of occupational physical activity and all-cause mortality with lifestyle factors (including leisure-time physical activity) being potential mediators .

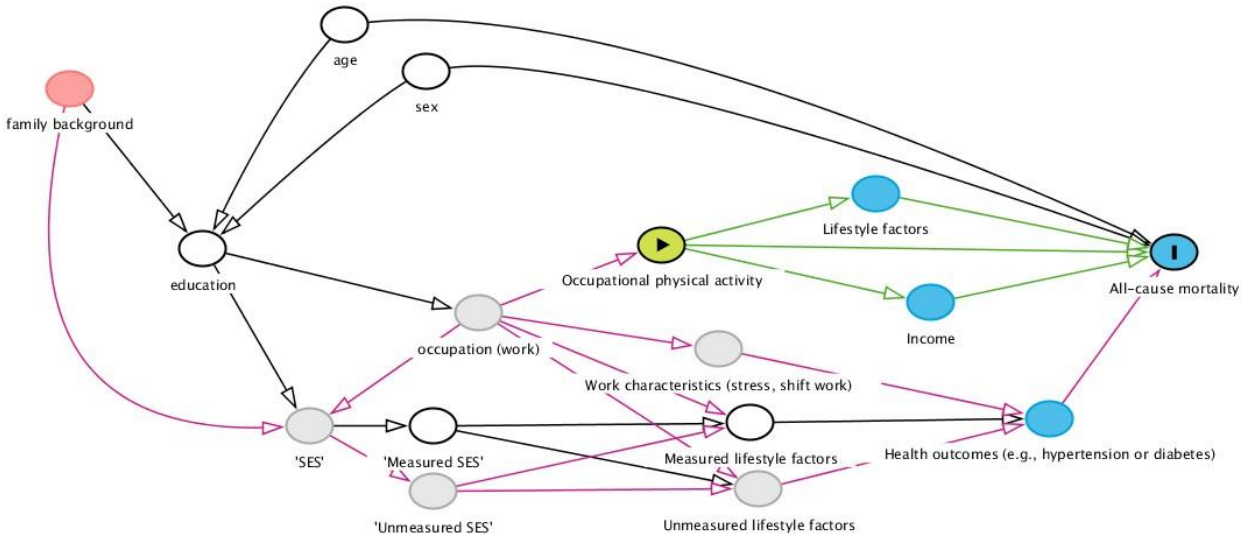

Figure 4. DAG describing the association of occupational physical activity and all-cause mortality with both lifestyle factors (including leisure-time physical activity) and income being potential mediators .