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Reference Materials

Title: **Does physical activity prevent cognitive decline and dementia?: A systematic review and meta-analysis of longitudinal studies**

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Abstract:

Background

By 2050, it has been estimated that approximately one-fifth of the population will be made up of older adults (aged ≥60 years). Old age often comes with cognitive decline and dementia. Physical activity may prevent cognitive decline and dementia.

Results

Twenty-one cohorts on physical activity and cognitive decline and twenty-six cohorts on physical activity and dementia were included. Meta-analysis, using the quality-effects model, suggests that participants with higher levels of physical activity, when compared to those with lower levels, are at reduced risk of cognitive decline, and dementia. Sensitivity analyses revealed a more conservative estimate of the impact of physical activity on cognitive decline and dementia for high quality studies, studies reporting effect sizes as ORs, greater number of adjustments (≥10), and longer follow-up time (≥10 years). When one heavily weighted study was excluded, physical activity was associated with an 18% reduction in the risk of dementia.

Conclusions

Longitudinal observational studies show an association between higher levels of physical activity and a reduced risk of cognitive decline and dementia. A case can be made for a causal interpretation. Future research should use objective measures of physical activity, adjust for the full range of confounders and have adequate follow-up length. Ideally, randomised controlled trials will be conducted. Regardless of any effect on cognition, physical activity should be encouraged, as it has been shown to be beneficial on numerous levels.

Key findings:

The current study provides support for the association between physical activity and cognitive decline and dementia. Although methodological limitations of the current evidence base preclude the drawing of definitive conclusions, a case can be made for a causal interpretation of this association. The implications are statistically and clinically significant. It has been estimated, for example, that 3 million AD cases could be averted globally, with a 10–25 per cent shift in modifiable risk factors, including physical activity. Future research should use objective measures of physical activity, adjust for the full range of known, or likely, confounders, and have adequate follow-up length. Ideally, randomised-control trials would be conducted; however, implementing constant stimulation of physical activity over a long duration may prove difficult. **In the meantime, given that physical activity has been shown to be beneficial across multiple health domains, genders and ages, physical activity should be encouraged regardless of its relationship with cognitive decline and dementia.**