Physical activity as a mediating factor between social isolation and cognitive change in older adults: an analysis of the Canadian Longitudinal Study on Aging (CLSA)

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In recent years, social isolation has gained increased recognition as a critical public health issue, both globally and within Canada, with older adults experiencing the highest levels of social isolation. Social isolation is associated with a myriad of age-related negative health outcomes, including cognitive decline and impairment. While interventions targeting social isolation to improve cognitive function have only demonstrated small effect sizes, interventions targeting physical activity may be more effective in protecting against cognitive decline. Using baseline and follow-up one data from the Canadian Longitudinal Study on Aging (CLSA), latent change score models, incorporating mediation, were constructed to estimate the indirect effect of social isolation on cognitive change through physical activity. Multi-group models were constructed based on age-group (45-65 versus 65+) and sex.

On average, executive function scores decreased from baseline to follow-up, especially among adults 65+, whereas memory tended to be unchanged over time. Indirect effects of social isolation on cognition through physical activity were evident in males and females 65+ for

memory change ($\hat{b}$ = -0.005 [99.9% CI: -0.007 to -0.002], $p < .00$ in both groups) and in males adults 65+ for EF change ($\hat{b}$ = -0.01 [99.9% CI: -0.02 to -0.006], $p < .001$). Indirect effects were not observed for adults 45-65 years. The results suggest that social isolation is associated with diminished physical activity, and in turn, diminished physical activity is associated with decline in memory in adults 65+, and larger declines in executive function in older males. Therefore, physical activity may be one behavioural target to mitigate the negative effects of social isolation on cognitive decline among older women and men. Public health initiatives combining physical activity with activities promoting social interaction may be one way to mitigate the negative impact of social isolation on cognitive health.

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