

Physical Activity and Alzheimer Disease: A Protective Association

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Objective To explore whether being physically active can decrease Alzheimer disease (AD) risk.

Participants and Methods We conducted a meta-analysis of prospective observational cohort studies reporting the association between physical activity (PA) and incident AD. Relevant articles were identified by title and abstract in the electronic databases PubMed, ScienceDirect, and Scopus using the keywords Alzheimer, Alzheimer disease, Alzheimer's, Alzheimer's disease, physical activity, sport, exercise, sedentary, fitness, and combinations thereof for articles published in any language up to February 15, 2016. Criteria for consideration included division of the study cohort by PA levels and sample size specification for each PA level group, quantification (number) of persons who had development of AD, and PA assessment during time off work (not just work time). We followed the MOOSE (Meta-analyses of Observational Studies in Epidemiology) recommendations and used the Newcastle-Ottawa scale for study quality assessment. **Results** Ten high-quality studies were included in meta-analysis I (23,345 participants). Follow-up ranged from 3.9 to 31 years, and the participants' age ranged from 70 to 80 years. The pooled odds ratio for development of AD in participants who were more vs less physically active was 0.65 (95% CI, 0.56-0.74; $P < .001$; no publication bias [$P = .24$] but with heterogeneity among studies [$I^2 = 31.32\%$]). We could identify participants' adherence to international PA recommendations in 5 studies, which constituted

meta-analysis II (10,615 participants). The pooled odds ratio for development of AD in participants who were active vs those who were inactive was 0.60 (95% CI, 0.51-0.71; $P < .001$; no publication bias [$P = .34$] and no heterogeneity [$I^2 = 5.63\%$]). Conclusion Although the limitations of self-reported PA data must be considered, regular PA performed by elderly people might play a certain protective role against AD. © 2016 Mayo Foundation for Medical Education and Research