Leisure Activities and the Risk of Dementia
A Systematic Review and Meta-analysis

Sizhen Su, MD, Le Shi, PhD, Yongbo Zheng, MD, et al.

Cite as: Neurology® 2022;99:e1651-e1663. doi:10.1212/WNL.0000000000200929

Study Question
Is there an association between different types of leisure activity and the incidence of dementia?

What Is Known and What This Paper Adds
Leisure activities are major components of a healthy lifestyle. The results of this investigation show the different leisure activities, including physical activity (PA), cognitive activity (CA), and social activity (SA), are inversely associated with the risk of all-cause dementia (ACD) and its 2 major subtypes, Alzheimer disease (AD) and vascular dementia (VD).

Methods
This is a systematic review and meta-analysis. The investigators searched the Cochrane, PubMed, Embase, and Web of Science databases to identify longitudinal studies published in English that assessed the association of PA, CA, and SA with incident ACD, AD, and VD. Relative risks (RRs) and 95% CI were estimated using random-effects meta-analysis. Subgroup analyses were used to estimate potential effect modifiers.

Results and Study Limitations
A total of 38 longitudinal studies were included in the meta-analysis. These studies had a total of 2,154,818 participants (the average or median age ranged between 45 and 93 years at baseline). During the follow-up (3–44 years), 74,700 participants developed ACD, 2,848 AD, and 1,423 VD. Compared with individuals who did not engage in leisure activities, the pooled RR estimates for ACD, AD, and VD in individuals engaged in leisure activities were 0.83 (95% CI: 0.80–0.87), 0.82 (95% CI: 0.74–0.90), and 0.68 (95% CI: 0.54–0.86), respectively. The subgroup analyses showed that physical (RR = 0.83, [0.78–0.88]), cognitive (RR = 0.77 [0.68–0.87]), and social (RR = 0.93 [0.87–0.99]) activities were inversely associated with the incidence of ACD. In addition, physical (RR = 0.87 [0.78–0.96]) and cognitive (RR = 0.66 [0.52–0.85]) activities were related with a reduced risk of AD. Physical activity (RR = 0.67 [0.53–0.85]) was associated with a lower incidence of VD. A limitation of this study is that the association between leisure activities of different intensity and frequency and the risk of dementia was not analyzed because of the insufficient number of studies. Other limitations include assessing leisure activities with self-reports, potential publication bias, and the limited follow-up duration.

Study Funding and Competing Interests
This work was supported by the Natural Science Foundation of China, the Young Elite Scientists Sponsorship Program by CAST, and PKU-Baidu Fund. The authors report no competing interests. Go to Neurology.org/N for full disclosures.

Table
Relative Risk of Leisure Activities on Dementia

<table>
<thead>
<tr>
<th>Leisure activities</th>
<th>All-cause dementia</th>
<th>Alzheimer disease</th>
<th>Vascular dementia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical activity</td>
<td>0.83 (0.78, 0.88)</td>
<td>0.87 (0.78, 0.96)</td>
<td>0.67 (0.53, 0.85)</td>
</tr>
<tr>
<td>Cognitive activity</td>
<td>0.77 (0.68, 0.86)</td>
<td>0.66 (0.52, 0.85)</td>
<td>0.98 (0.44, 2.18)</td>
</tr>
<tr>
<td>Social activity</td>
<td>0.93 (0.87, 0.99)</td>
<td>0.89 (0.63, 1.26)</td>
<td>—</td>
</tr>
</tbody>
</table>

A subgroup analysis of the protective role of different types of leisure activities in the risk of all-cause dementia, Alzheimer disease, and vascular dementia.
Leisure Activities and the Risk of Dementia: A Systematic Review and Meta-analysis
Neurology 2022;99:e1651-e1663 Published Online before print August 10, 2022
DOI 10.1212/WNL.0000000000200929

This information is current as of August 10, 2022

Updated Information & Services
including high resolution figures, can be found at:
http://n.neurology.org/content/99/15/e1651.full

References
This article cites 48 articles, 12 of which you can access for free at:
http://n.neurology.org/content/99/15/e1651.full#ref-list-1

Subspecialty Collections
This article, along with others on similar topics, appears in the following collection(s):
All Cognitive Disorders/Dementia
http://n.neurology.org/cgi/collection/all_cognitive_disorders_dementia
Alzheimer's disease
http://n.neurology.org/cgi/collection/alzheimers_disease
Vascular dementia
http://n.neurology.org/cgi/collection/vascular_dementia

Permissions & Licensing
Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:
http://www.neurology.org/about/about_the_journal#permissions

Reprints
Information about ordering reprints can be found online:
http://n.neurology.org/subscribers/advertise

Neurology® is the official journal of the American Academy of Neurology. Published continuously since 1951, it is now a weekly with 48 issues per year. Copyright © 2022 The Author(s). Published by Wolters Kluwer Health, Inc. on behalf of the American Academy of Neurology. All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.