Physical Activity as a Therapeutic Strategy for MCI and Dementia

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I have no relevant commercial relationships to disclose.
Is Dementia Risk Falling?

Cases are more prevalent but the risk of cognitive decline shows a surprising drop in some countries

By Esther Landhuis on January 25, 2016

The percent of adults over 70 years of age with cognitive impairment dropped from 12.2 to 8.7 between 1993 and 2002.

Credit: ©iStock

http://www.scientificamerican.com/article/is-dementia-risk-falling/

Mathews et al. Lancet 2013; 382:1405-1412;
Herbert et al. Neurology 2010; 75: 786-791;
## Population Attributable Risk: Modifiable Risk Factors

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Worldwide</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>19.1%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Physical Inactivity</td>
<td>12.7%</td>
<td>21.0%</td>
</tr>
<tr>
<td>Smoking</td>
<td>13.9%</td>
<td>10.8%</td>
</tr>
<tr>
<td>Depression</td>
<td>7.9%</td>
<td>11.1%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>2.9%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Midlife Hypertension</td>
<td>5.1%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Midlife Obesity</td>
<td>2.0%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Adjusted Combined</td>
<td>28.2%</td>
<td>30.6%</td>
</tr>
</tbody>
</table>

Exercise is not just prevention.

**Practice guideline update summary: Mild cognitive impairment**


Ronald C. Petersen, MD, PhD, Oscar Lopez, MD, Melissa J. Armstrong, MD, MSc, Thomas S.D. Getchius, Mary Ganguli, MD, MPH, David Gloss, MD, MPH&TM, Gary S. Gronseth, MD, Daniel Marson, JD, PhD, Tamara Pringsheim, MD, Gregory S. Day, MD, MSc, Mark Sager, MD, James Stevens, MD, and Alexander Rae-Grant, MD

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**Recommendation**

For patients diagnosed with MCI, clinicians should recommend regular exercise (twice/week) as part of an overall approach to management (Level B).
# Exercise in Dementia

## Cognition: Physical Activity vs. Usual Therapy

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Exercise</th>
<th>Usual care</th>
<th>Std. Mean Difference</th>
<th>Weight</th>
<th>Std. Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>N</td>
<td>Mean(SD)</td>
<td></td>
<td>IV,Random,95% CI</td>
</tr>
<tr>
<td>Cognition: all trials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IV,Random,95% CI</td>
</tr>
<tr>
<td>Christofolletti 2008</td>
<td>Strength, balance 3x/wk</td>
<td></td>
<td></td>
<td>11.0 %</td>
<td>0.06 [-0.68, 0.80]</td>
</tr>
<tr>
<td>Eggermont 2009a</td>
<td>Walking 5x/wk</td>
<td></td>
<td></td>
<td>13.5 %</td>
<td>0.06 [-0.34, 0.45]</td>
</tr>
<tr>
<td>Eggermont 2009b</td>
<td>Hand movement 5x/wk</td>
<td></td>
<td></td>
<td>12.7 %</td>
<td>-0.53 [-1.05, -0.02]</td>
</tr>
<tr>
<td>Hwang 2010</td>
<td>Upper body dance, 3x/wk</td>
<td></td>
<td></td>
<td>9.5 %</td>
<td>0.35 [-0.58, 1.29]</td>
</tr>
<tr>
<td>Kemoun 2010</td>
<td>Aerobic exercise, 3x/wk</td>
<td></td>
<td></td>
<td>10.9 %</td>
<td>0.99 [0.24, 1.74]</td>
</tr>
<tr>
<td>Van de Winckel 2004</td>
<td>Strength &amp; balance, daily</td>
<td></td>
<td></td>
<td>10.0 %</td>
<td>0.95 [0.08, 1.83]</td>
</tr>
<tr>
<td>Venturelli 2011</td>
<td>Walking, 4x/wk</td>
<td></td>
<td></td>
<td>7.2 %</td>
<td>2.88 [1.59, 4.17]</td>
</tr>
<tr>
<td>Volkers 2012</td>
<td>Walks, 5x/wk</td>
<td></td>
<td></td>
<td>13.3 %</td>
<td>-0.34 [-0.77, 0.08]</td>
</tr>
<tr>
<td>Vreugdenhil 2012</td>
<td>Strength, walking, daily</td>
<td></td>
<td></td>
<td>11.8 %</td>
<td>0.74 [0.10, 1.38]</td>
</tr>
</tbody>
</table>

Subtotal (95% CI) 215 194 100.0 % 0.43 [-0.05, 0.92]

Forbes et al. 2015 Cochrane Review
Exercise in Dementia: Broad Impact

Function
- Functional abilities
- Aerobic fitness & strength
- Balance and mobility

Well-being
- Perceived well-being
- Perceived capacity
- Meaningful activity, maintenance of self
- Social/peer support
- Companionship
- Sense of community

Ginis et al. BMC Public Health 2017
Cedervall et al. Aging Ment Health 2014;
How do we get people active?

Understand:
• Barriers, motivator, facilitators

Mental health
Attention, memory, orientation
Anxiety
Apathy
Depression

Physical Health
Balance & mobility
Co-morbidities
Pain
Transportation

Sedentary
Physically Active
Societal Barriers

Disability:

“Those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others” (Social Model of Disability)

-UN Convention on Rights of Persons with Disability

(Credit: Mary-Beth Wighton)
UN Convention on the Rights of Persons with Disabilities

*Includes dementia as a disability*

1. Respect for inherent dignity & autonomy
2. Non-discrimination
3. Full participation and inclusion in society
4. Respect and acceptance of persons with disabilities as part of human diversity
5. Equality of opportunity
6. Accessibility
7. (Equality between men and women)
8. (Respect for the evolving capacities of children with disabilities)
**Box 2: Self: freedom**

‘You can see the doors closing everywhere and all these things that have to come to a halt.’ (Carer 2b)

‘I don’t tend to do things like I used to, you know, I kind of just went down a shop, those are the things I miss most of all . . . Just to do what I want to so, when I want to do it. I want to do things I want to do myself, on my own personally, than be, you know, be guided by someone who says you have to do this.’ (Person with Alzheimer’s disease 3a)

‘You get to rely on someone else sometimes.’ (Person with Alzheimer’s disease 4a)

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**Box 4: Others: social interaction**

‘It’s just a social occasion, just saying good morning to people, hello, making, cos he makes silly jokes all the time to people going to their work, y’know. The staff on reception are lovely people and, y’know, they welcome you. You meet the same people coming out, who are even earlier than we are, and the people in the pool. They all know him and know what he’s like and he gets his leg pulled and does the same. So it’s very upbeat.’ (Carer 2b)

‘because lots of people don’t understand do they (about dementia). They cast it aside as though it’s nothing but it is quite a big thing really.’ (Person with Alzheimer’s disease 3a)

‘The lady who has the class is delightful and she’s brilliant . . .after having had a yoga session, I feel as though I’m on cloud nine.’ (Person with Alzheimer’s disease 1a)

‘Up there (day centre) all the people are in the same as me so we all sort of get together and have a chat, have a laugh like, y’know a joke and it makes it easy.’ (Person with Alzheimer’s disease 5a)

‘I think it is more important for me to get out and be involved with other people and y’know have exercise as much as you can, y’know and be involved with other carers as well.’ (Carer 5b)
Objectives

Phase 1:

- To better understand the accommodations and supports needed for exercise participation among Canadians living with dementia from the perspective of persons living with dementia, care partners, and exercise providers.
Study 1:

• We conducted 4 focus groups:
  – 2 among people with MCI or dementia (n=10)
  – 2 among care partners (n=7)

• Focus groups were guided by a moderator who followed a semi-structured focus group guide

• Focus groups were transcribed verbatim.
Study 1:

- Focus group transcriptions were analyzed using thematic analysis, guided by the social-ecological model.
Results

• Themes regarding barriers and support for exercise among people with MCI or dementia emerged on the individual, relationship, and community levels.

• Key themes are highlighted here.
Perspective on Exercise among People with MCI/Dementia

- Physical activity as a meaningful activity
- Feeling strong, capable, alive in the moment
- Demonstrate ongoing capacity
- Social, mental, physical engagement
Multi-Level Barriers & Facilitators

Perception of Dementia

Perceptions of Exercise

Understanding & Accommodation of Dementia

Transportation

Care Partner

Social Identification

Community & Societal

Motivation to Exercise

Individual

Relationship

Hobson 2017 UW Thesis, in prep
…it’s all about training people that work in gyms. More trained people [to understand dementia], the better for sure

If gyms were working with people [with dementia], [they] need to be paying attention to what [people with dementia are] doing and give them some encouragement and welcome them when they come in.

Not everybody who is a trainer can work with people with dementia. They don’t have the patience or, just don’t have a clue.
Study 2:

Objective:

• To understand the experiences of, perceived barriers and facilitators, and supports needed for exercise providers to deliver exercise to people with MCI or dementia?
Study 2:

• We conducted 4 focus groups among exercise providers (n=22) who delivered exercise to middle and old age adults (≥55 years)

• Sample included exercise providers from diverse settings (YMCA, day programs, private gyms)

• Similar procedures for conduct and analysis of focus groups
Exercise Providers’ Thoughts

- Diverse Perceptions of Dementia
- Ongoing Support to Accommodate Heterogeneity
- Need for Education
- Learning As They Go
- Exercise in Dementia

Bechard, Mitchell et al. Can Geriatr J (Abstract) 2018
Supports Needed for Exercise

• Convergent themes emerged from focus groups among people with MCI/dementia, care partners, and exercise providers

• In particular, need for exercise providers who understand unique and diverse needs of people with dementia
Supports Needed for Exercise

• Need to connect people with MCI or dementia with knowledgeable exercise providers

• People with dementia are highly dependent on care partner
  – Supports needed for individuals without a care partner or with a care partner who still works
    • Transportation
    • In-home?
Next Steps

Gather perspective of more diverse representatives
• By geography
• By ethnicity
• By gender, sexual identity

Map barriers to behavior change strategies.
Conclusions

• Evidence accumulating for exercise as a therapy for dementia

• People with dementia face considerable barriers to exercise

• Better educated & trained exercise providers may support exercise among people with MCI/dementia
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