

The Magic of Exercise

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"I am pushing sixty. That is enough exercise for me."
—Mark Twain (1835–1910)

In a recent editorial on dementia we were somewhat negative about the use of drugs to treat dementia.¹ Previously we had pointed out that nootropics, such as piracetam, appeared to be as effective as the more expensive newer drugs.² Unfortunately, our pessimism was supported by a recent meta-analysis in the *Annals of Internal Medicine*, which concluded that cholinesterase inhibitors and memantine, while being statistically significant in improving the domains of cognition and global assessment, produced marginal clinical improvement in these areas and less consistent effects on behavior and quality of life.³ Based on these findings, is it time for the busy clinician to despair concerning the hope for treating dementia? Fortunately, the answer is no, because it appears that a magic bullet that has been beneath our radar is available to prevent and treat older persons with dementia. That magic treatment is **exercise**.

Larson et al⁴ studied 1740 persons older than 65 years of age. In a mean follow-up of 6.2 years, they found that persons who exercised 3 or more times a week developed dementia at a rate of 6.7 per 1000 person years less than those who exercised fewer times. This study was supported by numerous previous studies that have supported the concept that exercise slows down the development of dementia.^{5–12} The protective effect of exercise on dementia is more evident in persons who are apolipoprotein E4 carriers.¹⁰ Exercise reduces the risk of vascular cognitive impairment without dementia.¹³

This issue of the *Journal* carries a review article highlighting the positive effects of exercise on cognitive behavior.¹⁴ This review supports a meta-analysis showing that exercise has a robust effect on cognition, especially in the area of executive function.¹⁵ Exercise is also predictive of cognitive decline in persons with diabetes mellitus.¹⁶ The role of exercise in diabetes is further supported by an original article in this issue.¹⁷ Exercise clearly is a better treatment than medications for dementia.^{18–20}

Depression represents a common problem in nursing home residents.^{21–23} Exercise has been shown to improve depressive symptoms²⁴ and mood in nursing home residents with Alzheimer's disease.²⁵

In addition, it has become clear that medications are not

very useful for the treatment of difficult behaviors in the nursing home.²⁶ Volicer et al²⁷ found that continuous activity programming could be helpful in managing behavioral symptoms.

As shown in Table 1, the benefits of exercise are not limited to cognition, dysphoria, and behavioral problems. Exercise is a cornerstone in increasing strength and balance and decreasing falls,^{28,29} improving functional decline^{30,31} and frailty,^{32,33} improving mobility in Parkinson's patients,³⁴ reducing injuries,³⁵ improving glycemic regulation,^{36–38} slowing loss of bone mineral density,³⁹ constipation,^{40–42} fear of falling,⁴³ enhanced sleep,⁴⁴ quality of life,^{45,46} and decreasing incontinence.⁴⁷ Only vitamin D supplementation comes close to producing benefits equivalent to exercise.^{48,49}

Are exercise programs in nursing homes feasible? In 1990, our medical students conducted a walking program that improved gait and balance in nursing homes.⁵⁰ Simple and effective. It would appear successful programs require exercise twice a week.⁵¹ Hui and Rubenstein⁵² pointed out the need for clinicians to encourage exercise programs. Instrumental music encourages participation in exercise programs.⁵³ Dancing is an excellent form of exercise therapy. Resnick et al⁵⁴ reviewed the barriers to an aggressive restorative program in nursing homes.

The *Journal* has previously stressed the importance of evidence-based principles in the care of older persons.^{55,56} We have called for quality improvement programs for falls prevention.⁵⁷ It is time for the medical director of the twenty-first century to step up to the plate.⁵⁸ Let us aggressively limit the use of questionably effective expensive drugs and lead our facilities in providing active exercise-orientated recreation therapy programs.

Table 1. Positive Effects of Exercise

1. Decrease cognitive impairment
2. Improve function
3. Decrease dysphoria
4. Decrease behavioral disturbances
5. Reduce falls
6. Reduce injuries
7. Reduce fear of falling
8. Decrease frailty
9. Reverse sarcopenia
10. Slow bone loss
11. Reduce pain
12. Decrease constipation
13. Decrease incontinence
14. Enhance sleep
15. Improve glycemic control
16. Improve quality of life

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