Dementia and the Importance of EXERCISE

Barbara Adams: Physiotherapist
Clinical Director – PhysioCare at Home
THE most important physiotherapy RULE to live by

If you can’t stand up by yourself…
You can’t live by yourself

EXERCISE keeps you independent!
1 in 5 Seniors who falls and break a hip will DIE this year!
Falls rate in dementia doubled

- 60% Falls Rate in Dementia
- 30% Falls Rate in Seniors
- 60% Falls Rate in Dementia
Cost of health and social services for Dementia clients

- $25,000 per year with a 2 x per week home exercise program

- $34,000 per year without

Physiocare at Home

Free Community Education Programs

- Monthly Lecture Series for Seniors with Parkland Shannex
  - Falls Prevention program
  - Top 10 tips for staying on your feet
  - How to exercise safely at any age
  - Pain and fatigue management and sleep issues

- Back care & lifting courses to private business and health care agencies
- Alzheimers care for Physiotherapists
- Public lectures for churches, Rotary Club, Seniors Groups
- Teaching PT’s about outcome measures in home care
Barbara’s Post Graduate Outcome measures training

- Dalhousie U. School of PT 1984
- 50 post graduate courses
- **Functional Capacity Evaluation Training**
  - 2003 R. Matheson
- Progressive Goal Attainment Program
  - 2007 Michael Sullivan
- Outcome Measures Course
  - 2009 Mary Law
- **Advanced Vestibular Training**
  - 2010 S. Herdman–Atlanta Georgia
Co Chair of Serving Seniors

Arthritis Society and Health Partners Speaker

Lectures + Fall Prevention Committee

Wrote FM & CFS Owners Manual

VOLUNTEER WORK

Serving Seniors your trusted resource of caring dedicated professionals

The LINC Study

NSCPCCN NOVA SCOTIA CHRONIC PAIN COLLABORATIVE CARE NETWORK

Making Sense of Pain Research

Preventing Falls Together A program of Community Links

Health partners Partenaires santé
1 hour of personal service
At home with your family
Building skills & confidence

COMPLETE PHYSIOTHERAPY
“At your doorstep” both at home, or while in hospital
Phone: 404 4200
Fax: 404 4201
PHYSIOTHERAPY CARE AT HOME
SERVICES

Dementia Care Program
Falls Screening Clinics
Home Safety Assessments
Physiotherapy Care
IN HOME PHYSIOTHERAPY SERVICES

• LOSS OF MOBILITY due to:
  - Acute/Chronic pain
  - Arthritis,
  - Musculoskeletal Injuries and total hip or knee joint replacements
  - Neurological Rehabilitation (ie. Stroke, TBI, CP, PD, SCI, MS, MD)
  - Pediatric Conditions
  - Post-hospitalization reconditioning and post fall recovery
    - Post-operative Rehabilitation
    - Post-partum Health, burns, hands,
    - Pregnancy, post delivery

Children and Adults of all ages...at home or in hospital
What’s the problem?

• Dementia clients are often under-stimulated and unengaged in life.
What’s the problem?

• It’s a challenge to know what to do or how much to do with Dementia Clients!
What’s the problem with researching best exercise practice in dementia?

- Hard to implement standard protocols consistently
- Dementia clients have other illnesses
  - Arthritis or Heart disease
  - Visual problems, cognitive difficulties
  - Neurologic disorders or Cancer
  - Clients have progressive illness
- Best duration of studies not known
- **Staffing shortages and family support**
- Lack of funding (not medication based)
- Frequent staffing change, lack of dementia care training
- Focus on cognitive research interventions

The Alzheimers Care Giver Challenge

• Alzheimers is the most common kind of dementia

• An estimated 500,000 Canadians have Alzheimer's disease or a related dementia with 10% being less than 60 years old

• **A quarter of all informal caregivers are seniors themselves**, …a third of them – over 200,000 people – are over the age of 75

• One-in-five Canadians age 45 and over are providing some form of care to seniors who have long-term health problems. ³

• Almost half the informal caregivers in Canada (43 per cent) are between 45 and 54, many balancing this role with job and family responsibilities.
What’s the problem?

- Lack of exercise and diseases like hypertension and diabetes

= 

- Increased risk of developing ALZHEIMERS!

Why do Dementia client struggle with exercise?

- **Difficulty and/or lack of interest in setting goals**
- Little sense of pleasure in making progress towards a goal
- Difficulty taking initiative
- **Motivated by immediate needs**
- Past Consequences for negative behavior don’t alter future actions
- Inability to reflect on past experience to plan for the future
- Difficulty adapting to change
- May vacillate from impulsivity to rigidity
- May continue to use the same strategy to solve a life problem, even when it hasn’t worked
- Doesn’t learn to stop and select a strategy that best fits a problem before trying to solve it
- Very poorly developed identity or self concept
- Little awareness of, or interest in learning of personal limitations or weaknesses
- Rapid mood fluctuations, not due to a psychiatric mood disturbance
- Insensitivity to inner emotional state. May “act out” an emotion, rather than recognize or verbalize it
- **Poor frustration tolerance.** Gives up easily when frustrated.
- Sees personal problems as externally caused. Unable to see his/her own contribution to the problem.
- Difficulty taking other’s perspective, or point of view
- Lack of empathy.
What’s the solution? IT’s PETS

- Physiotherapy Role in Dementia
  - Physiotherapy Rx to increase function
  - Ensure safety and equipment
  - Train clients, family and care givers
  - Symptom reduction
Social and Physical Activity: The *Biggest Bang* for the Buck!

There are only 2 things shown to statistically significantly affect overall health outcomes for the elderly population: social isolation on the negative side and regular physical activity on the very positive one.

There is no more important ‘prescription’ to write, individualize and assure compliance with than regular PA for all patients, whether robust or frail, living independently or in nursing homes.
What does exercise do to the Dementia Brain

• Regular physical activity in dementia clients increases the:
  1. **Endurance** of cells and tissues to oxidative stress,
  2. Vascularization of the brain
  3. **Energy** metabolism and neurotrophin synthesis.

These are all important in
− neurogenesis,
− memory improvement,
− and brain plasticity

What’s the solution?

• Those who are more fit early in life, have a lower chance of developing Dementia!


The association between midlife cardiorespiratory fitness levels and later-life dementia: a cohort study.
What exercise does for seniors?

• **Reduces the risk of**
  - Some types of cancer (in particular breast and colon cancer)
  - **High blood pressure and heart disease**
  - Type 2 diabetes
  - Osteoporosis
  - Risk of falls
  - Stroke
What exercise does for Dementia Patients?

- Improves
  - Safety with **transfers** from chairs and toilets and getting into and out of bed
  - Opportunities for social interaction and reducing the feeling of isolation
  - Body image and a sense of achievement.
  - **Confidence** about the body and its capabilities
  - Maintain physical independence for longer
  - Ability to do household tasks without help
  - Physical function and cognition
  - **Balance and walking ability**
  - Behaviour and mood
  - Sleep
  - Appetite

Exercise Goal for Seniors

- Supervised walks of 30 minutes a day, – 5 days a week
- 50% Maximum Heart Rate
- Strengthening 3 days / wk
- Stretching and balance work 3 days / wk


The effect of regular walks on various health aspects in older people with dementia: protocol of a randomized-controlled trial.
Pedometer Activity Categories – what’s normal for each age

- **Chronically Disabled** (3500 to 5500)
- **Seniors** (6000 to 8500)
- **Healthy Adults** (7000 to 13000)
- **Children** (12000 to 16000)
Physical activity and the risk of dementia in oldest old.
Sumic A Michael YL, Carlson NE Howieson DB Kaye JA
11 women reported exercising > 4 hours per week, and 38 participants developed CI (mean onset age 93; mean follow-up 4.7 years). The effect of exercise was modified by gender.

In more active women (> 4 hours/week), the risk of CI was reduced by 88% (95% confidence interval 0.03, 0.41) compared to those less active. Less active women had 2 times the incidence rate of CI compared to less active men and almost 5 times the rate compared to active women.

DISCUSSION:
This study demonstrates the beneficial effects of exercise on healthy brain aging even in the oldest old and emphasizes the importance of increasing PA in older women.
Overcoming Physical Obstacles

- Seeking perfection
- **Not taking exercise seriously**
- Taking it too seriously
- Not setting goals

Exercise interventions for dementia & cognitive impairment.

Teri L, Logsdon RG McCurry SM

• Source
  University of Washington, Seattle, Washington, USA. lteri@u.washington.edu

• Abstract
  Research evidence strongly suggests that increased physical exercise may not only improve physical function in older adults but may also improve mood and slow the progression of cognitive decline. This paper describes a series of evidence-based interventions grounded in social-learning and gerontological theory that were designed to increase physical activity in persons with dementia and mild cognitive impairment. These programs, part of a collective termed the Seattle Protocols, are systematic, evidence-based approaches that are unique 1) in their focus on the importance of making regular exercise a pleasant activity, and 2) in teaching both cognitively impaired participants and their caregivers behavioral and problem-solving strategies for successfully establishing and maintaining realistic and pleasant exercise goals. While additional research is needed, initial findings from randomized controlled clinical trials are quite promising and suggest that the Seattle Protocols are both feasible and beneficial for community-residing individuals with a range of cognitive abilities and impairments.

• PMID: 18548177 [PubMed - indexed for MEDLINE] PMCID: PMC2518041 Free PMC Article
4 Goals of Exercise

1. Functional Improvement
2. Mood Improvement
3. Cognitive Protection
4. Improve Executive Function

Key Principles to Exercise with Dementia: MAKE IT PLEASANT

• P Make it **pleasurable**
• L Make it something the client **liked** in the past
• E Make it **easy** to implement and do
• A Make it **appropriate** to their level of function and dementia
• S Make it **safe**
• A Make it **aerobic** to get the heart and lungs working harder
• N Make it involve **noise** (talking, radio, piano) to trigger hearing
• T Make it involve **touching** to stimulate eye hand coordination
Key Principles to Exercise with Dementia: MAKE IT PLEASANT

• WALKING...
• is the most PLEASANT and safest activities one can do
The more effective programmes ran three times a week for three months and involved dynamic exercise in standing.
6 Keys to Safe Exercises for Seniors

1. **Multi-component training** is superior to single-component balance training
6 Keys to Safe Exercises for Seniors

2. **Focus on balance recovery tasks**
   - bending, reaching and turning
   - No warning, quick arm or leg strategy to recover
Tai Chi improves balance and walking time in Dementia

UST adjusted mean improved from 4.0 to 5.1 (Week 4, \( p < .05 \)) and 5.6 (Week 16, \( p < .05 \)); TUG improved from 13.2 to 11.6

- Fall risk-relevant functional mobility outcomes in dementia following dyadic tai chi exercise.
3. **Couple resistance training with balance training**
4. **Correctly sequence balance exercises**

Seniors will need to perform at least two (or more) types of exercise activities on the same day, and most likely within the same exercise session.
## 4 Types of Exercises

<table>
<thead>
<tr>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerobic</td>
<td>Balance</td>
<td>Flexibility</td>
<td>Weight Training</td>
</tr>
</tbody>
</table>

1st: Aerobic
2nd: Balance
3rd: Flexibility
4th: Weight Training
Order for doing exercises with Seniors

Aerobic

Balance

Strength & Flexibility
6 Keys to Safe Exercises for Seniors

5. *Create innovative balance exercises*
6. **Change the availability of sensory cues**

- Ramps and curbs
- Sunglasses
- Different lighting
- Eyes closed
- Balance pad
- Different surfaces
1. **Arm progressions**: Vary the use and position of the arms to make a given balance exercise more difficult. Initially, the client may need to grasp or touch another object, such as a wall or back of a chair, to facilitate balance. Progressively, exercises can be performed with arms spread out and raised to shoulder height to assist with stability. Ultimately, clients can move arms in from sides to a folded position across the chest.

2. **Surface progressions**: Alter the surface or apparatus on which clients perform balance exercises, progressively increasing the difficulty. For instance, foam pads, balance disks and BOSU balls can be substituted for a hard, flat surface while performing multiple standing balance exercises. Similarly, stability balls can be exchanged for regular chairs when performing sitting exercises.

3. **Visual progressions**: Try mitigating the visual sensory cues provided to the client during balance exercises. For example, the lighting of the room can be gradually dimmed, sunglasses may be worn inside, or eyes may be shut completely.

4. **Tasking progressions**: Require clients to initially master each balance exercise performed as a singular task. When this level of achievement is attained, additional tasks should be supplemented to the routine. Cognitive tasks or added physical tasks are a few of the readily available options.
Stage 1
No cognitive or functional decrements

• Stage 1 Exercises
  – All forms of exercises and social activities
Stage 2
Very mild forgetfulness, work difficulties

• Stage 2 Exercises
  – Balance and walking exercises
Stage 3
Mild cognitive difficulty no traveling alone

- Stage 3 Exercises
  - That challenging muscle strength and endurance
Stage 4
Late confusional stage; increased problems

• Stage 4 Exercises
  – Exercises that challenge the mind
Stage 5
Poor recall of recent events; may need

• Stage 5 Exercises
  – Music, holding hands, pool, darts
Stage 6
More advanced memory orientation problems; needs assistance with ADL; personality changes

- Stage 6 Exercises
  - Calm environments, one stimulus at a time
Stage 7
Late dementia with loss of verbal abilities

• Stage 7 Exercises
  – Historically familiar activities and pets
•QUESTIONS?
• Physiotherapy
• Care of Dementia
• Clients
1. Physiotherapy Assessment

✓ Goal Setting
Family Goals for Seniors

- Better health starts with a SMART Goal
2. Falls Risk Assessment: The Senior

- Medical History
- Cognition and memory
- Vision, Hearing
- Skin, foot issues and sensory changes
- Medication prescription and compliance
- Pain and Fatigue and sleep issues
- Bowel and bladder dysfunction
- Heart and lung issues and blood pressure control
- Swallowing and speech
- Vestibular challenges and dizziness
- Strength, Range of Motion
- Balance – static and dynamic
- Gait assessment
- Transfers
- Need for assistive devices
2. Falls Risk Assessment: The Home

- Stairs
- Pathways
- Trip Hazards
- Height of furniture, table and bed
- Ability to get doors, closets and fridge open
- Ability to carry tea, newspaper or purse around the house
- Ability to get on and off the toilet or into the tub
- Width of doorways
- Need for assistive devices like M rails or railings
- Transferring to a car or van or access a bus
2. Falls Risk Assessment: The Family

- Spouses who can help or who need help
- Children – local or away
- Friends
- Other resources
3. Treatment and Training Program

- Family and Care Giver Training
- Equipment Recommendation
- Pain Management Strategies
- Need for additional home supports and resources
- Review of physical impairments
  - Function
  - Vision
  - Blood pressure and heart rate
  - Skin issues and pressure sores
  - Foot issues and sensory problems
  - Vestibular challenges
  - Cognitive barriers
  - Swallowing issues
  - Sleep complaints
  - Weight and hydration challenges
  - Medication compliance
Physiotherapy Treatment

3. Treatment and Training Program

✓ Family and Care Giver Training
3. Treatment and Training Program

- Equipment Recommendation

Canadian Red Cross / Croix-Rouge canadienne
3. Treatment and Training Program

✓ Equipment Recommendation
Correct Height = safety
3. Treatment and Training Program

- Pain Management Strategies
3. Treatment and Training Program

- Need for additional home supports and resources
3. Treatment and Training Program

- Review of physical impairments
  - Function
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3. Treatment and Training Program

- Review of physical impairments
- Function
  - Strength
  - Range of motion
  - Transfers
  - Static Balance
  - Dynamic Gait
  - Sensation
  - Contractures
  - Spasms
  - Cranial nerves
  - Eye movements
  - Vestibular control
  - Transfers
  - Endurance
  - Cardiopulmonary status
  - Pain level
  - Fatigue issues
Part 3 Seniors and the 4 Step Screening Tool

Barbara Adams: Physiotherapist

Clinical Director – PhysioCare at Home
#1. Can you stand up
Tests 2, 3 and 4
The 10, 10 and 10 Screening Tool

- Reach (Functional)
- Grip
- Stand (On 1 foot)

Strength
# Functional Reach

<table>
<thead>
<tr>
<th>Test</th>
<th>Norm</th>
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</thead>
<tbody>
<tr>
<td>• Raise right arm forward 90 degrees</td>
<td>&gt; 12 in women</td>
</tr>
<tr>
<td></td>
<td>&gt; 14 in men</td>
</tr>
<tr>
<td>• Lean forward</td>
<td>&lt; 10 in = Falls Risk</td>
</tr>
</tbody>
</table>
Functional Reach

Functional Reach (inch)

- Sept 22nd 2011
- Oct 27th
- Nov 28th
- Nov 30th
- Dec 2nd
- Dec 5th
- Dec 7th
- Dec 9th
- Dec 12th
- Dec 14th
- Dec 16th
- Dec 21st
- Feb 13th
- Mar 15th
- Norm
## Grip Strength

<table>
<thead>
<tr>
<th>Test</th>
<th>Norm</th>
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<tbody>
<tr>
<td>• Grip in kg</td>
<td>45 kg Male</td>
</tr>
<tr>
<td></td>
<td>32 kg Female</td>
</tr>
<tr>
<td></td>
<td>30 senior M</td>
</tr>
<tr>
<td></td>
<td>20 senior F</td>
</tr>
</tbody>
</table>
## Single Limb Stance Time

<table>
<thead>
<tr>
<th>Test</th>
<th>Norm</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Stand on 1 foot</td>
<td>30 seconds</td>
</tr>
<tr>
<td></td>
<td>&lt; 10 secs = Falls Risk</td>
</tr>
</tbody>
</table>
Barb’s study group SLST improvement

Under 51 years  Over 50 years old

Pre study single limb stance (secs)  Post study single limb stance (secs)
Single Limb Stance Time

Standing on good foot

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
</tr>
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<tbody>
<tr>
<td>Sept 22nd 2011</td>
<td>0</td>
</tr>
<tr>
<td>Oct 27th</td>
<td>0.5</td>
</tr>
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<td>Nov 28th</td>
<td>2</td>
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<tr>
<td>Dec 2nd</td>
<td>1</td>
</tr>
<tr>
<td>Dec 5th</td>
<td>2.5</td>
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<tr>
<td>Dec 7th</td>
<td>3</td>
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<tr>
<td>Dec 9th</td>
<td>3.5</td>
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<tr>
<td>Dec 12th</td>
<td>4</td>
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<tr>
<td>Dec 14th</td>
<td>4.5</td>
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<tr>
<td>Dec 16th</td>
<td>5</td>
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<tr>
<td>Feb 13</td>
<td>6</td>
</tr>
<tr>
<td>Mar 15</td>
<td>7</td>
</tr>
<tr>
<td>Norm</td>
<td>10</td>
</tr>
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</table>
Talking Digital Grippers
ON SALE TODAY

Amazon.com sells them for: $40 + Tax

PhysioCare at Home:

Phone: 404 4200
5991 Spring Garden Rd
Halifax, Suite 340