# Evidence-Based Literature Review on Alzheimer's Dementia:

# Articles of High Priority

**Focused Question #4:**
What is the effect of environmental-based interventions
on performance, affect, and behavior
(Montessori, Snoezelen, ESP, and Progressively-Lowered Stress Threshold)
in both the home and institutions? *(Contexts)*

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# Snoezelen:

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**Level I:**
***TI: Snoezelen: its long-term and short-term effects on older people with dementia**
AU: Baker-R; Dowling-Z; Wareing-LA; Dawson-J; Assey-J
SO: British-Journal-of-Occupational-Therapy (BR-J-OCCUP-THER) 1997 May; 60(5): 213-8 (16 ref)
AB: A randomised controlled trial was conducted to investigate the long-term and short-term effects of the Snoezelen environment on the behaviour, mood and cognition of elderly patients with dementia, and to gain an understanding of the processes occurring within Snoezelen. Patients participated in either eight Snoezelen or eight activity sessions. Pre-trial, mid-trial, post-trial and follow-up assessments were carried out at home and at the day hospital. Ratings of behaviour and mood were also made before, during and after each session. In the long term, the main benefits for Snoezelen patients were in the domain of socially disturbed behaviour. In the home setting, there was a highly significant difference between the two groups in favour of Snoezelen, and in the hospital setting it was nearly significant. Short-term improvements in behaviour and mood were evident for both groups after sessions, and communication was significantly better during Snoezelen sessions in comparison with activity sessions. The processes occurring within Snoezelen sessions seemed to involve facilitation of verbal expression and memory recall.

**Level I:**
***TI: A comparison of the effects of Snoezelen and reminiscence therapy on the agitated behaviour of patients with dementia**
AU: Baillon, S., Van Diepen, E., Prettyman, R., Redman, J., Rooke, N., & Campbell, R. (2004)
SO: International Journal of Geriatric Psychiatry Volume 19; Issue 11; Pages 1047-1052
OT SEEKER
AB: Background
Behavioural disturbance, such as agitation, is a common feature of dementia, and causes significant problems and distress for carers. Snoezelen is increasingly used with people who have dementia, but there is limited evidence of its efficacy.
Objective
This crossover randomised controlled study aimed to evaluate the effect of Snoezelen on the mood and behaviour of patients with dementia, in comparison to the effect of an established and accepted intervention, reminiscence therapy.
Methods
Twenty patients with dementia and significant agitated behaviour, received three sessions each of Snoezelen and reminiscence. The effects were assessed using measures of observed agitated behaviour and heart rate over the course of the sessions, and mood and behaviour during the sessions.
Results
Both interventions had a positive effect. Snoezelen was no more beneficial than reminiscence in terms of effecting a significant reduction in agitated behaviour or heart rate. There was considerable variation in the way individuals responded to each intervention.

Snoezelen may have a more positive effect than reminiscence, but due to the observed differences between the interventions being small, and the small number of subjects, this advantage was not demonstrated statistically.
Conclusions
Further research, with larger numbers of subjects, and an appropriate control is required to establish the benefits of Snoezelen for people at different stages of dementia, and to identify any benefits additional to those derived from increased staff attention.

**Level II:**

***TI: Behavioral and mood effects of Snoezelen integrated into 24-hour dementia care**

AU: van-Weert-JC; van-Dulmen-AM; Spreeuwenberg-PM; Ribbe-MW; Bensing-JM
SO: Journal-of-the-American-Geriatrics-Society (J-AM-GERIATR-SOC) 2005 Jan; 53(1): 24-33 (48 ref)
AB: OBJECTIVES: To investigate the effectiveness of snoezelen, integrated in 24-hour daily care, on the behavior and mood of demented nursing home residents. DESIGN: Quasiexperimental pre- and posttest design. SETTING: Twelve psychogeriatric wards of six nursing homes, spread over different parts of the Netherlands. PARTICIPANTS: One hundred twenty-five patients with moderate to severe dementia and care dependency were included in the pretest and 128 in the posttest; 61 were completers (included in both pre- and posttest). INTERVENTION: Experimental subjects received an individual 24-hour snoezel program, based on family history taking and stimulus preference screening. Caregivers were trained, and (organizational) adaptations were made to fulfill the conditions for resident-oriented snoezel care. The control group received usual nursing home care. MEASUREMENTS: Observations were made on the wards using subscales of the Dutch Behavior Observation Scale for Psychogeriatric Inpatients, the Dutch version of the Cohen-Mansfield Agitation Inventory, and the Cornell Scale for Depression in Dementia. Independent assessors observed video recordings of morning care and rated residents' behavior and mood using INTERACT and FACE, respectively. RESULTS: Residents receiving snoezel care demonstrated a significant treatment effect with respect to their level of apathetic behavior, loss of decorum, rebellious behavior, aggressive behavior, and depression. During morning care, the experimental subjects showed significant changes in well-being (mood, happiness, enjoyment, sadness) and adaptive behavior (responding to speaking, relating to caregiver, normal-length sentences). CONCLUSION: Snoezel care particularly seems to have a positive effect on disturbing and withdrawn behavior. The results suggest that a 24-hour integrated snoezel program has a generalizing effect on the mood and behavior of demented residents.

# Montessori

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**Level IV:**
***TI: Resident-Assisted Montessori Programming (RAMP): training persons with dementia to serve as group activity leaders.**
AU:Camp,-C-J; Skrajner,-M-J
SO: Gerontologist. 2004 Jun; 44(3): 426-31
AB: The purpose of this study was to determine the effects of an activity implemented by means of Resident-Assisted **Montessori** Programming (RAMP). DESIGN AND METHODS: Four persons with early-stage dementia were trained to serve as leaders for a small-group activity played by nine persons with more advanced dementia. Assessments of leaders' ability to learn the procedures of leading a group, as well as their satisfaction with this role, were taken, as were measures of players' engagement and affect during standard activities programming and RAMP activities. RESULTS: Leaders demonstrated the potential to fill the role of group activity leader effectively, and they expressed a high level of satisfaction with this role. Players' levels of positive engagement and pleasure during the RAMP activity were higher than during standard group activities. IMPLICATIONS: This study suggests that to the extent that procedural learning is available to persons with early-stage dementia, especially when they are assisted with external cueing, these individuals can successfully fill the role of volunteers when working with persons with more advanced dementia. This can provide a meaningful social role for leaders and increase access to high quality activities programming for large numbers of persons with dementia. Copyright 2004 The Gerontological Society of America

**Level III:**
***TI: Montessori-based activities for long-term care residents with advanced dementia: effects on engagement and affect.**
AU: Orsulic-Jeras,-S; Judge,-K-S; Camp,-C-J
SO: Gerontologist. 2000 Feb; 40(1): 107-11
AB: Sixteen residents in long-term care with advanced dementia (14 women; average age = 88) showed significantly more constructive engagement (defined as motor or verbal behaviors in response to an activity), less passive engagement (defined as passively observing an activity), and more pleasure while participating in **Montessori-based** programming than in regularly scheduled activities programming. Principles of **Montessori-based** programming, along with examples of such programming, are presented. Implications of the study and methods for expanding the use of **Montessori-based** dementia programming are discussed.

***TI: Montessori improved cognitive domains in adults with Alzheimer's disease**
AU: Vance-DE; Johns-RN
SO: Physical-and-Occupational-Therapy-in-Geriatrics (PHYS-OCCUP-THER-GERIATR) 2002; 20(3/4): 19-36 (37 ref)
**AB: Montessori** materials were used in two adult day-care centers to slow cognitive decline in adults with Alzheimer's disease. Using a within-subject design, participants in one adult day care received three months of the **Montessori** materials, then standard

intervention later. Participants were administered a battery of cognitive measures at baseline, three months, and six months. Favorable scores for the **Montessori** condition were significant with the subscales of the Ordinal Scale of Psychological Development-Modified (total, object permanence, means-ends), Dementia Rating Scale (total, attention, concept, memory), Parachek Geriatric Behavior Rating Scale (social behavior), and the Wechsler Memory Scale (digit forward). **Montessori** materials appeared instrumental in positively influencing basic cognitive abilities of attention, object permanence, and social behavior.

## Environmental Skill Building Program

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**Level I:**

***TI: Effects of the home environmental skill-building program on the caregiver-care recipient dyad: 6-month outcomes from the Philadelphia REACH Initiative.**
AU: Gitlin,-L-N; Winter,-L; Corcoran,-M; Dennis,-M-P; Schinfeld,-S; Hauck,-W-W
SO: Gerontologist. 2003 Aug; 43(4): 532-46
AB: PURPOSE: We examine 6-month effects of the Environmental Skill-Building Program on caregiver well-being and care recipient functioning and whether effects vary by caregiver gender, race (White or non-White), and relationship (spouse or nonspouse). DESIGN AND METHODS: We enrolled 255 family caregivers of community-residing persons with Alzheimer's disease or related disorders, of whom 190 participated in a follow-up interview. Caregivers were randomized to a usual care control group or intervention group that received five home contacts and one telephone contact by occupational therapists, who provided education, problem-solving training, and adaptive equipment. Baseline and 6-month follow-up included self-report measures of caregiver objective and subjective burden, caregiver well-being, and care recipient problem behaviors and physical function. RESULTS: Compared with controls (n = 101), intervention caregivers (n = 89) reported less upset with memory-related behaviors, less need for assistance from others, and better affect. Intervention spouses reported less upset with disruptive behaviors; men reported spending less time in daily oversight; and women reported less need for help from others, better affect, and enhanced management ability, overall well-being, and mastery relative to control group counterparts. Statistically significant treatment differences were not found for hours helping with instrumental activities of daily living, upset with providing assistance with instrumental activities of daily living and activities of daily living, perceived change in somatic symptoms, White versus non-White caregivers, or care recipient outcomes. IMPLICATIONS: The Environmental Skill-Building Program reduces burden and enhances caregiver well-being in select domains and has added benefit for women and spouses.

***TI: Maintenance of effects of the home environmental skill-building program for family caregivers and individuals with Alzheimer's disease and related disorders.**
AU: Gitlin,-L-N; Hauck,-W-W; Dennis,-M-P; Winter,-L
SO: J-Gerontol-A-Biol-Sci-Med-Sci. 2005 Mar; 60(3): 368-74
AB: BACKGROUND: Few studies evaluate whether short-term intervention effects are

maintained over time for families caring for persons with dementia. This article examines whether treatment effects found at 6 months following active treatment were sustained at 12 months for 127 family caregivers who participated in an occupational therapy intervention tested as part of the National Institutes of Health Resources for Enhancing Alzheimer's Caregiver Health (REACH) initiative. METHODS: A randomized two-group design was implemented with three assessment points: baseline, 6 months, and 12 months. Caregivers were randomly assigned to a usual care control group or intervention that consisted of six occupational therapy sessions to help families modify the environment to support daily function of the person with dementia and reduce caregiver burden. Following 6-month active treatment, a maintenance phase consisted of one home and three brief telephone sessions to reinforce strategy use and obtain closure. Non-inferiority statistical analysis was used to evaluate whether intervention caregivers maintained treatment benefits from 6 to 12 months in comparison to controls. RESULTS: For the sample of 127 at 6 months, caregivers in intervention reported improved skills ($p = .028$), less need for help providing assistance ($p = .043$), and fewer behavioral occurrences ($p = .019$) compared to caregivers in control. At 12 months, caregiver affect improved ($p = .033$), and there was a trend for maintenance of skills and reduced behavioral occurrences, but not for other outcome measures. CONCLUSION: An in-home skills training program helps sustain caregiver affect for those enrolled for more than 1 year. More frequent professional contact and ongoing skills training may be necessary to maintain other clinically important outcomes such as reduced upset with behaviors.

## Progressively Lowered Stress Threshold:

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**Level IV:**
***TI: Caring for people with Alzheimer's disease using the conceptual model of progressively lowered stress threshold in the clinical setting.**
AU: Hall,-G-R
SO: Nurs-Clin-North-Am. 1994 Mar; 29(1): 129-41
AB: Care of the people with Alzheimer's disease and related disorders (ADRD) has been fraught with controversy, often resulting in competing philosophies about what constitutes the "correct" approach. Whether developing an individualized plan of care or specialized programming, it is helpful to use a conceptual framework. The **Progressively** Lowered **Stress Threshold** (PLST) conceptual model has been used extensively for planning individualized care for patients with ADRD, developing specialized environments and programming, evaluating outcomes of interventions, and serving as the theoretical framework for nursing research. This article describes use of the PLST model in a clinical setting.

**Level I:**
***TI: History, development, and future of the Progressively Lowered Stress Threshold: a conceptual model for dementia care**
AU: Smith-M; Gerdner-LA; Hall-GR; Buckwalter-KC
SO: Journal-of-the-American-Geriatrics-Society (J-AM-GERIATR-SOC) 2004 Oct; 52(10): 1755-60 (49 ref)

AB: Behavioral symptoms associated with dementia are a major concern for the person who experiences them and for caregivers who supervise, support, and assist them. The knowledge and skill of formal and informal caregivers affects the quality of care they can provide and their ability to cope with the challenges of caregiving. Nurses are in an excellent position to provide training to empower caregivers with the knowledge and skills necessary to reduce and better manage behaviors. This article reviews advances in geriatric nursing theory, practice, and research based on the **Progressively** Lowered **Stress Threshold** (PLST) model that are designed to promote more adaptive and functional behavior in older adults with advancing dementia. For more than 17 years, the model has been used to train caregivers in homes, adult day programs, nursing homes, and acute care hospitals and has served as the theoretical basis for in-home and institutional studies. Care planning principles and key elements of interventions that flow from the model are set forth, and outcomes from numerous research projects using the PLST model are presented.

***TI: Alzheimer's residents' cognitive and functional measures: special and traditional care unit comparison**
AU: Swanson,-E-A; Maas,-M-L; Buckwalter,-K-C
SO: Clin-Nurs-Res. 1994 Feb; 3(1): 27-41
AB: The aim of this field experiment was to compare the effects of a special care unit (SCU) on residents with Alzheimer's disease (AD) who lived on the SCU and on traditional (integrated) nursing home units. Twenty-two subjects, 13 on the SCU and 9 on traditional integrated units were compared. Repeated measures ANOVA was used to assess differences between the two groups and within the groups over two bimonthly pretests and two bimonthly posttests. No significant differences on cognitive or functional abilities scores were evident for the groups and no significant differences were found over time. However, consistent with the prediction of the **Progressively** Lower **Stress Threshold** Model, the SCU subjects' function was better than subjects on traditional units when measured by socially accessible behaviors.

## Environmental Interventions:

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**Level I:**
**TI: Randomized, Controlled Trial of a Home Environmental Intervention: Effect on Efficacy and Upset in Caregivers and on Daily Function of Persons With Dementia**
AU: Gitlin, L.N.; et al.
SO: Gerontologist. 41(1): 4-14. 2001. CHID
AB: This article describes the short-term effects of a home enviroment intervention on self-efficacy and upset in caregivers and daily function of patients with dementia. It also reports the influence of caregiver gender, race, and relationship to patient on treatment effects. Families of dementia patients (n=171) were randomly assigned to intervention and usual care (control) groups. The intervention consisted of five 90-minute visits by occupational therapists who provided education and physical and social environmental modifications. Compared with controls, intervention caregivers reported fewer declines in instrumental activities of daily living, less decline in self care, and fewer behavior

problems in patients at 3 months after baseline. Intervention spouses reported less upset, women reported enhanced self-efficacy in managing behaviors, and women and minorities reported enhanced self-efficacy in managing functional dependency. The results suggest that an environmental approach may slow the progression of IADL dependence in dementia patients and enhance self-efficacy and reduce upset in certain subgroups of caregivers.

**Level III:**

***TI: Family caregiver acceptance and use of environmental strategies provided in an occupational therapy intervention**

AU: Corcoran-MA; Gitlin-LN

SO: Physical-and-Occupational-Therapy-in-Geriatrics (PHYS-OCCUP-THER-GERIATR) 2001; 19(1): 1-20 (36 ref)

AB: Statement: This article describes the specific environmental strategies that were accepted and used by 100 Family caregivers who participated in a home-based occupational therapy intervention. The intervention was designed to enhance the skills of caregivers in using the physical and social environment to address troublesome behaviors and dependency associated with the progression of dementia. The intervention involved five 90-minute home visits by occupational therapists who worked with families to identify caregiving issues and generate environmental-based solutions. Solutions ranged from no cost recommendations (e.g., removing clutter, simplifying the environment), to resource dependent recommendations (e.g., installing grab bars or handrails).

Method of Study: Study participants were interviewed at home prior to intervention to gather basic demographic information and level of functioning of the person with dementia. During intervention, the occupational therapist recorded the number and types of caregiver issues that were the focus of intervention, the number and types of strategies introduced for each care issue and whether each strategy was accepted and subsequently utilized by caregivers. Barris, Kielhofner, Levine and Neville's (1985) model of the environment (objects, tasks, social groups, culture) was used to organize treatment focus and categorize environmental strategies.

Results: Of the nine problem areas that formed the focus of intervention, the issues most frequently identified by caregivers as problematic included caregiver-centered concerns, catastrophic reactions, wandering, and incontinence. Caregivers were willing to try a total of 1,068 strategies offered as part of intervention. Of the strategies, 869 (81%) were subsequently used independently by caregivers. Caregivers used a greater number of' strategies that modified the task and social environments (with respectively 84% and 83% of tried strategies actually used by caregivers) than the objects layer of the environment (74% of tried strategies).

Conclusions: Caregivers are receptive to and utilize environmental strategies offered by occupational therapists. Understanding which strategies were accepted and used by caregivers in this study provides important knowledge from which to enhance occupational therapy practice with this under-served population.

**Level IV:**

***TI: Modifying the Home Environment or Community Setting for People With Cognitive Impairments**

AU: Hiatt, L.G.

SO: Pride Institute Journal of Long Term Health Care. 9(2): 18-27. Spring 1990. CHID

AB: This journal article describes environmental factors to consider when modifying the home or a community facility in order to care for patients with Alzheimer's disease or dementia. According to the author, the objectives of improved design should be to optimize motion of the patient, create environments for meaningful movement, and create environments that allow motion or behavior that is within the patient's capacity. Four environmental considerations are discussed: physical attributes of the building design such as lighting, room size, and object placement; psychological attributes of design such as a favorite chair or location, noise, and objects that stimulate memory; social environments such as the number of people in a room; and cultural environments, referring to the traditions and patterns of living. Four questions designed to guide caregivers in their functional observation of patients are discussed. Additional environmental factors are described and include the patient's attention span and sensory stimulation versus overstimulation, securing boundaries and controlling access within an environment, the patient's perception of objects and the need to camouflage features to redirect behaviors, and use of objects or landmarks to help patients find their way through an area. Meaningful changes can be made in the environment through careful furniture selection, providing adequate lighting, using color contrast to improve visibility, and incorporating artwork and patterns in the decorating scheme. Seven tips for planning design changes are listed.

**Level IV:**

***TI: Environmental Correlates to Behavioral Health Outcomes in Alzheimer's Special Care Units**

AU: Zeisel, J., et al.

SO: Gerontologist. 43(5): 697-711. 2003. CHID

AB: This article examines the association between environmental design features of nursing home special care units and the incidence of aggression, agitation, social withdrawal, depression, and psychotic problems among residents with Alzheimer's disease (AD) or related dementia. Hierarchical linear modeling techniques were used to assess associations between seven design features and behavioral measures for 427 residents in 15 special care units, with statistical controls included for the influence of cognitive status, need for assistance with activities of daily living, prescription drug use, amount of staff training in AD, and staff to resident ratio. Results revealed associations between behavioral health measures and certain environmental design features, as well as between behavioral health measures and both resident and nonenvironmental facility variables. The environmental features associated with reduced aggressive and agitated behavior include privacy and personalization in bedrooms, residential character, and an ambient environment that residents can understand. Features associated with reduced depression, social withdrawal, misidentification, and hallucinations include common areas that vary in ambience and exit doors that are camouflaged. The results suggest that

certain features of the physical environment in special care units can improve the behavioral health of residents with AD.

## Balancing Arousal Controls Excesses (BACE):

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**Level III:**
***TI Effect of the BACE intervention on agitation of people with dementia**
AU: Kovach, CR, Taneli, Y, Dohearty, P, Schlidt, AM, Cashin, S, Silva-Smith, AL
SO: GERONTOLOGIST PD DEC PY 2004 VL 44 IS 6 BP 797 EP 806
AB: Purpose: This study tests the effectiveness of the theoretically driven BACE (i.e., Balancing Arousal Controls Excesses) intervention in decreasing agitation in residents of long-term care with moderate or severe dementia. Design and Methods: A pretest-posttest double-blinded experimental design with random assignment was used with a sample of 78 participants. The BACE intervention controls the daily activity schedule so that there is a balance between a person's high-arousal and low-arousal states. The outcome measure was observed agitation. Results: When time spent in arousal imbalance at pretest was controlled for, a repeated measures analysis of covariance revealed a statistically significant Group X Time interaction, $F(1, 69) = 4.26$, $p = .043$, with a partial $eta(2) = .06$. The average change in agitation for the treatment group was a decrease of 8.43 points (SD = 12.01) from pretest to posttest, an effect size of .7. Implications: The results of this study support the theory that balancing arousal states by using an individualized approach is effective in decreasing agitation levels of people with dementia.

## Home and Community Environment (HACE):

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**Level III:**
***TI: Development of the Home and Community Environment (HACE) Instrument**
AU: Keysor, JJ, Jette, AM, Haley, SM
SO: JOURNAL OF REHABILITATION MEDICINE PD JAN PY 2005 VL 37 IS 1 BP 37 EP 44
AB: Objective: To develop and pilot test the Home and Community Environment instrument (HACE), a self-report measure designed to characterize factors in a person's home and community environment that may influence level of participation.
Design: A cross-sectional survey.

Subjects: Sixty-two adults recruited from community organizations and an outpatient rehabilitation center.
Methods: Six environmental domains were assessed: (i) home mobility; (ii) community mobility; (iii) basic mobility devices; (iv) communication devices, (v) transportation factors; and (vi) attitudes. Descriptive statistics, Kappa statistics and Kruskal-Wallis tests were used to ascertain whether persons were capable of assessing characteristics of their environment, could do so reliably and whether the distribution of environmental factors differed by type of living situation.
Results: Participants were capable of characterizing their home environment and most aspects of their community with acceptable reliability. The median percent agreement of the 6 environmental domains ranged from 75% to 100% (median Kappa values ranged from 0.47 to 1.0). Percent agreement for individual RACE items ranged front 58% to 100%. The lowest reliability values were observed in the community mobility domain. As hypothesized, individuals who lived in private homes characterized home and community mobility factors differently front those who lived in multi-unit complexes; evidence of HACE's validity.
Conclusion: HACE is a promising self-report instrument for assessing characteristics of an individual's home and community environments. Additional research is needed to assess its utility, for rehabilitation research.

## Memory Aides:

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**Level III:**
***TI: Using external memory aids to increase room finding by older adults with dementia.**
AU: Nolan,-B-A; Mathews,-R-M; Harrison,-M
SO: Am-J-Alzheimers-Dis-Other-Demen. 2001 Jul-Aug; 16(4): 251-4
AB: When nursing home residents with dementia are unable to locate their own rooms, it often creates problems for staff and other residents. The impact of placing two external memory aids outside participants' bedrooms was evaluated by using a multiple-baseline design experiment. Three female special care unit (SCU) residents with severe Alzheimer's disease (MMSE = 5.7) participated in the study. Results showed that a combination of a portrait-type photograph of the participant as a young adult and a sign stating the resident's name increased room finding by over 50 percent with all three participants. Room finding stabilized at 100 percent accuracy for all participants within a few days of implementing the environmental intervention.

# Music:

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**Level I:**

***TI: Music therapy for dementia symptoms.**

AU: Koger,-S-M; Brotons,-M

SO: Cochrane-Database-Syst-Rev. 2000; (2): CD001121

AB: BACKGROUND: While music/music therapy does not represent a treatment of dementia, its use is based on a possible beneficial effect on symptoms including social, emotional and cognitive skills and for decreasing behavioral problems of individuals with dementias. Thus, there are clear implications for patients' and caregivers' quality of life. However, quantification and documentation of the evidence of this effect is necessary. Professional music therapists are accountable for providing efficient, beneficial treatment. Further, music therapists are responsible for assessing, designing and implementing music therapy treatments, monitoring client progress, and reformulating their practice according to data collected and new advancements in the field. If they wait until sufficient valid, empirical data on all aspects of a disability or music response are available before attempting to design a therapy session, they may well reach retirement age before even one client can be served. On the other hand, promulgating the efficacy of music therapy in general, or of specific music therapy techniques, in the absence of any substantiation other than intuition or tradition borders on professional recklessness. OBJECTIVES: To gather and evaluate the evidence for the effectiveness of music therapy for dementia symptoms. SEARCH STRATEGY: All available sources of references were searched for randomised controlled trials of music therapy used as an intervention in dementia. The search terms included 'controlled trial or study, music*, therapy, dement*, Alzheimer*, cognitive impairment.' SELECTION CRITERIA: The reviewers assessed the methodological quality of the studies available for inclusion. The criteria used are presence and adequacy of a control condition, independent assessment of patients' performance (ie standardized ratings carried out by a person other than the music therapist) and the number of participants (no fewer than three). DATA COLLECTION AND ANALYSIS: No randomised controlled trials, or trials with quantitative data suitable for analysis were found. MAIN RESULTS: The research into music therapy to date has lacked methodological design rigour. However, the research evidence available provides sufficient grounds on which to justify further investigations into the use of music therapy in dementia patients. In this context, the reviewers discuss some of the issues and research from the studies that were considered for inclusion. REVIEWER'S CONCLUSIONS: This review was not able to identify reliable empirical evidence on which to justify the use of music therapy as a treatment for dementia. However, the evidence available suggests that music therapy may be beneficial in treating or managing dementia symptoms, and the predominant conclusion of this review is the highlighting of the need for better designed studies of the intervention.

***TI: Music interventions for people with dementia; a review of the literature**

AU: Sherratt, K; Thornton, A.; Hatton, C.

SO: Aging-Ment-Health. 2004 Jan; 8(1): 3-12

AB: This paper provides a qualitative review of 21 published articles of clinical empirical studies looking at the effects of a variety of music activities on the emotional and behavioural responses in people with **dementia**. General information is reviewed such as the setting and **context** of studies, research findings and explanatory variables. Methodological issues are also discussed, particularly in relation to observational methods, and theoretical frameworks such as the progressively lowered stress threshold model are evaluated. Music appears to have a range of applications in **dementia** care but previous reviews have highlighted methodological weaknesses of studies. Recommendations for future research include the use of continuous time sampling methodology and to record the duration of observed behaviours.

## Reminiscence Therapy:

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**Level I:**

***TI: Some psychosocial therapies may reduce depression, aggression, or apathy in people with dementia**

AU: Herrmann-N

SO: Evidence-Based-Mental-Health (EVID-BASED-MENT-HEALTH) 2005 Nov; 8(4): 104 (3 ref)

AB: Does psychosocial therapy reduce depression, aggression, and apathy in people with dementia?

METHODS

Design: Systematic review.

Study selection and analysis: Eligible studies were randomised controlled trials (RCTs), non-RCTs, and crossover trials comparing psychosocial versus control interventions in people with dementia diagnosed according to DSM-III, DSM-IV, or ICD-10 criteria. The psychosocial interventions were: behaviour, psychomotor, and art therapy, supportive psychotherapy, validation/integrated emotion oriented care, multisensory stimulation/snoezelen, simulated presence therapy, reminiscence, gentle care, passivities of daily living (PDL), reality orientation, skills training, and activity or recreational therapy. Data were extracted on age, sex, type of dementia, diagnostic criteria, severity and duration of dementia, type of psychosocial and control intervention, outcome measures, and study duration. Data were not pooled due to the heterogeneity of study interventions and outcome measures.

Outcomes: Depression (Hamilton Depression Scale, Cornell Scale for Depression in Dementia, and Beck Depression Inventory); aggression (Dutch Assessment Scale for Elderly Patients--aggression subscale); apathy (Dutch Behaviour Observation Scale for psychogeriatric Inpatients--apathetic behaviour subscale).

MAIN RESULTS

Nineteen studies met inclusion criteria. Depression: one high quality RCT (72 people) found that behaviour therapy (pleasant events and problem solving dimensions), administered by a trained caregiver, reduced depression in people with Alzheimer's disease and a major or minor depressive disorder (DSM-III-R criteria), compared with an untrained caregiver or a caregiver given standard information by a therapist (no further data reported). Aggression: one high quality RCT (43 people) found that psychomotor

therapy significantly reduced aggression compared with activity therapy in people with Alzheimer's disease, who were "functionally disordered", but mobile, and living in a residential nursing home (no further data reported). Apathy: one high quality RCT (66 people) found that multisensory stimulation/snoezelen therapy significantly reduced apathy compared with activity therapy or no therapy, in people with moderate to severe dementia (MMSE 0--17; no further data reported). The review found no evidence of the effect of behaviour therapy (pleasant events and problem solving dimensions), psychomotor therapy, or multi-sensory stimulation, on the other outcomes of interest. The review also found limited or no evidence of the effect of other psychosocial interventions on depression, aggression, or apathy.

CONCLUSIONS

Behaviour therapy administered by a trained caregiver reduced depression in people with Alzheimer's disease and a major or minor depressive disorder. Psychomotor therapy reduced aggression compared with activity therapy in people with Alzheimer's disease. Multisensory stimulation/snoezelen therapy reduced apathy compared with activity therapy or no therapy in people with moderate to severe dementia. However, there is limited or no evidence of the efficacy of other psychosocial interventions on depression, aggression, or apathy.

*__TI: Cognitive stimulation therapy improves cognition and quality of life in older people with dementia__

AU: Leach-L

SO: Evidence-Based-Mental-Health (EVID-BASED-MENT-HEALTH) 2004 Feb; 7(1): 19

AB: Does cognitive stimulation therapy improve cognition and quality of life in older people with dementia?

METHODS:

Design: Randomised controlled trial.

Allocation: Unconcealed.

Blinding: Single (outcome assessors blinded).

Follow up period: Seven weeks.

Setting: Five day centres and 18 residential homes in London and Hertfordshire, UK; time period not stated.

Patients: 201 people (158 women and 43 men) diagnosed with dementia according to DSM-IV criteria. Main inclusion criteria were: scoring between 10 and 24 on the Mini-Mental State Examination (MMSE) and ability to communicate and understand communication (score of 1 or 0 for questions 12 and 13 of the Clifton Assessment Procedures for the Elderly-Behaviour Rating Scale); ability to see and hear well enough to participate; having no major physical illness or disability, or diagnosed learning disability. Mean age of participants was 85.3 years.

Intervention: Participants receiving cognitive stimulation therapy (CST) (115 people) took part in twice weekly group sessions, of 45 minutes each, for 7 weeks. Sessions were based on reality orientation and cognitive stimulation. A "reality orientation board" displayed at each session displayed the group name and other personal and orientation information. Sessions began with gentle non-cognitive exercises to provide continuity and orientation. Sessions focused on themes, such as food or childhood, allowing

reminiscence as well as discussion of the present day. Sessions included multi-sensory stimulation where possible and encouraged the use of information processing rather than solely factual information. A range of activities was used in each session to allow the facilitator to adapt the level of difficulty of the activities according to the group's ability. Control group participants (86 people) took part in usual activities while group therapy was ongoing. In residential homes this mostly involved doing nothing, while in other centres it included games, music and singing, arts and crafts, or activity groups.

Outcomes: Cognitive function (MMSE and Alzheimer's Disease

Assessment Scale-Cognition (ADAS-Cog), quality of life (Quality of Life-Alzheimer's Disease (QoL-AD) questionnaire).

Patient follow up: Efficacy analysis 83%.

MAIN RESULTS:

CST significantly improved cognitive function compared with usual activities (mean change in MMSE score from baseline: +0.9 with CST v -0.4 with usual activities, p=0.04; mean change in ADAS-Cog score from baseline: +1.9 with CST v -0.3 with usual activities, p = 0.01; NNT for 4 point increase in ADAS-Cog score = 6, 95% CI 4 to 17). CST significantly improved quality of life compared with usual activities (mean change in QoL-AD score from baseline: +1.3 with CST v -0.8 with usual activities, p = 0.03 ).

CONCLUSIONS:

CST significantly improves cognition and quality of life in older people with dementia. Improvements in cognition with CST were comparable for those seen in studies of acetylcholinesterase inhibitors.

NOTES:

Authors note that there was significant variation between centres in improvement in cognitive function (ADAS-Cog score). The control group was smaller than the treatment group as at least 5 people from each centre, often with only 8 or 9 people eligible, were randomised to CST. Randomisation was not performed independently. The control group received heterogeneous "usual activities".

***TI: Use of reminiscence therapy in patients with Alzheimer's disease.**

AU: Pittiglio,-L

SO: Lippincotts-Case-Manag. 2000 Nov-Dec; 5(6): 216-20

AB: Reminiscence therapy is an effective nursing intervention to enhance self-esteem, reduce social isolation and depression, and provide comfort in the elderly population. Nursing case managers, in any setting, who are working with the elderly population will likely encounter patients with this debilitating disease. This article describes reminiscence therapy and how it can be used in the care of patients with Alzheimer's disease. Strategies for using reminiscence therapy with patients who have Alzheimer's disease are discussed.

# Aromatherapy:

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**Level I:**

***TI: Aromatherapy as a safe and effective treatment for the management of agitation in severe dementia: the results of a double-blind, placebo-controlled trial with Melissa.**

AU: Ballard,-C-G; O'Brien,-J-T; Reichelt,-K; Perry,-E-K

SO: J-Clin-Psychiatry. 2002 Jul; 63(7): 553-8

AB: BACKGROUND: Behavioral and psychological symptoms in dementia are frequent and are a major management problem, especially for patients with severe cognitive impairment. Preliminary reports have indicated positive effects of aromatherapy using select essential oils, but there are no adequately powered placebo-controlled trials. We conducted a placebo-controlled trial to determine the value of aromatherapy with essential oil of Melissa officinalis (lemon balm) for agitation in people with severe dementia. METHOD: Seventy-two people residing in National Health Service (U.K.) care facilities who had clinically significant agitation in the context of severe dementia were randomly assigned to aromatherapy with Melissa essential oil (N = 36) or placebo (sunflower oil) (N = 36). The active treatment or placebo oil was combined with a base lotion and applied to patients' faces and arms twice a day by caregiving staff. Changes in clinically significant agitation (Cohen-Mansfield Agitation Inventory [CMAI]) and quality of life indices (percentage of time spent socially withdrawn and percentage of time engaged in constructive activities, measured with Dementia Care Mapping) were compared between the 2 groups over a 4-week period of treatment. RESULTS: Seventy-one patients completed the trial. No significant side effects were observed. Sixty percent (21/35) of the active treatment group and 14% (5/36) of the placebo-treated group experienced a 30% reduction of CMAI score, with an overall improvement in agitation (mean reduction in CMAI score) of 35% in patients receiving Melissa balm essential oil and 11% in those treated with placebo (Mann-Whitney U test; $Z = 4.1$, $p < .0001$). Quality of life indices also improved significantly more in people receiving essential balm oil (Mann-Whitney U test; percentage of time spent socially withdrawn: $Z = 2.6$, $p = .005$; percentage of time engaged in constructive activities: $Z = 3.5$, $p = .001$). CONCLUSION: The finding that aromatherapy with essential balm oil is a safe and effective treatment for clinically significant agitation in people with severe dementia, with additional benefits for key quality of life parameters, indicates the need for further controlled trials.

***TI: Aromatherapy and behaviour disturbances in dementia: a randomized controlled trial.**

AU: Smallwood,-J; Brown,-R; Coulter,-F; Irvine,-E; Copland,-C

SO: Int-J-Geriatr-Psychiatry. 2001 Oct; 16(10): 1010-3

AB: A random controlled trial of the relaxing effects of an aromatherapy massage on disordered behaviour in dementia was conducted. Twenty-one patients were randomly allocated into one of three conditions, aromatherapy and massage (AM), conversation and aromatherapy (CA) and massage only (M). AM showed the greatest reduction in the frequency of excessive motor behaviour of all three conditions. This reached statistical

significance between the hours of three and four pm ($p < 0.05$). Post hoc analysis suggested that at this time of day the AM consistently reduced motor behaviour when compared with CA ($p = 0.05$). This provides preliminary evidence of a measurable sedative effect of aromatherapy massage on dementia within a robust scientific paradigm. Further research is recommended with an expanded sample size.

**Level II:**
***TI: [The effect of lavender aromatherapy on cognitive function, emotion, and aggressive behavior of elderly with dementia]**
AU: Lee,-S-Y
SO: Taehan-Kanho-Hakhoe-Chi. 2005 Apr; 35(2): 303-12
AB: PURPOSE: This study was to develop an aromatherapy hand massage program, and to evaluate the effects of lavender aromatherapy on cognitive function, emotion, and aggressive behavior of elderly with dementia of the Alzheimer's type. METHOD: The Research design was a nonequivalent control group non-synchronized quasiexperimental study. Lavender aromatherapy was administrated to experimental group I for 2 weeks, jojoba oil massage was administrated to experimental group II for 2 weeks, and no treatment was administrated to the control group for 2 weeks. Data was analyzed using the chi(2)-test, ANOVA, repeated measures of ANCOVA and ANCOVA in the SPSS program package. RESULT: 1. Experimental group I did not show significant differences in cognitive function in relation to the experimental group II and control group. 2. Experimental group I showed significant differences in emotion and aggressive behavior in relation to the experimental group II and control group. CONCLUSION: A Lavender aromatherapy hand massage program is effective on emotions and aggressive behavior of elderly with dementia of the Alzheimer's type.

# Touch Therapy:

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**Level V:**
***TI: The effectiveness of slow-stroke massage in diffusing agitated behaviors in individuals with Alzheimer's disease.**
AU: Rowe,-M; Alfred,-D
SO: J-Gerontol-Nurs. 1999 Jun; 25(6): 22-34
AB: Agitated behaviors of individuals with Alzheimer's disease (AD), often endured or unsuccessfully treated with chemical or physical restraints, markedly increase the stress levels of family caregivers. The Theoretical Model for Aggression in the Cognitively Impaired guided the examination of caregiver-provided slow-stroke massage on the diffusion of actual and potential agitation for community-dwelling individuals with AD. Characteristics and frequency of agitation were quantified by two highly correlated instruments, the Agitated Behavior Rating Scale Scoring Guide and the Brief Behavior Symptom Rating Scale. Expressions of agitation of patients with AD increased in a linear pattern from dawn to dusk. Verbal displays of agitation, the most frequently cited form of agitation in community-dwelling individuals with AD, were not diffused by slow-stroke massage. However, the more physical expressions of agitation such as pacing, wandering,

and resisting were decreased when slow-stroke massage was applied. This study contributes to building a body of knowledge regarding the phenomenon of agitated behaviors in cognitively impaired elderly individuals--its nature, frequency of occurrence, measurement, associated factors, and management.

## Light Therapy:

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**Level V:**
***TI: The use of light therapy to lower agitation in people with dementia**
AU: Sutherland-D; Woodward-Y; Byrne-J; Allen-H; Burns-A
SO: Nursing-Times (NURS-TIMES) 2004 Nov 9-15; 100(45): 32-4 (20 ref)
AB: Agitation and sleep disturbance are problematic for people with dementia and their carers, and have been linked to disrupted circadian rhythms caused by a lack of exposure to light. Bright light therapy (BLT) offers a powerful and cost-effective alternative to pharmacological options, and can be easily incorporated into care routines. This article describes practical issues faced when implementing light therapy in a nursing home setting, and attempts to address existing perceptions about its effectiveness.

## Multimodal:

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**Level II:**
***TI: Multiple pathways to self: A multisensory art experience**
AU: Jensen, Sharon M.
SO: Art Therapy, Vol 14(3), 1997. pp. 178-186.
AB: Presents a multisensory intervention combining the use of art, music, and movement utilized within a long-term care setting among 70-93 yr old persons, including those with ***Alzheimer's*** disease (AD) and related dementias. Results show that in spite of extreme cognitive losses, this experience enabled Ss to utilize remaining strengths and call upon alternate pathways to realize their greatest potential and to experience their greatest degree of stimulation and pleasure. The benefits derived by some Ss who regularly attended these sessions are discussed. It is noted that many were able to retrieve memories, enjoy socialization, and have the opportunity for affective expression, which they were no longer able to verbalize. These experiences served to increase a sense of self and preserve the uniqueness of the individuals. (PsycINFO Database Record (c) 2005 APA, all rights reserved)

***TI: The breakfast club: Results of a study examining the effectiveness of a multi-modality group communication *treatment*.**
AU: Santo Pietro, Mary Jo, Kean U, Dept of Special Education, Union, NJ, US
Boczko, Faerella
SO: American Journal of Alzheimer's Disease, Vol 13(3), May-Jun 1998. pp. 146-158.
AB: 20 mid-stage *Alzheimer's* patients (aged 75-93 yrs) in a nursing home participated for 12 wks each in 4 groups of 5 in a 5-day-a-week program of structured multi-modality

group communication intervention called "The Breakfast Club." 20 matched patients (aged 75-100 yrs) participated in a standard conversation group and served as controls. The Breakfast Club attempted to incorporate all that was currently known about the residual communication strengths of *Alzheimer's* patients and about previous *treatments* shown to be effective with this population. Results showed that Breakfast Club participants improved significantly on measures of language performance, functional independence and use of social communication while control Ss did not. Breakfast Club members also showed significant increases in "interest and involvement" and the use of procedural memories over the 12-wk period. 