

Dementia – Etiology, Assessment, and Management

Goals and Objectives

Course Description

"Dementia" is an online recorded video of a previously presented live CE webinar for occupational therapists and occupational therapy assistants that presents contemporary information about various dementia-related disorders including Alzheimer's disease, Lewy body, and Fronto-temporal dementia. This course includes discussion of pathogenesis, pharmacologic management, and therapeutic considerations for patients with these conditions.

Course Rationale

The purpose of this course is to provide participants with contemporary information about pathogenesis and therapeutic considerations of individuals with dementia. Rehabilitation professionals can use this information when developing and implementing treatment programs to address the specific needs of individuals effected by these conditions.

Course Goals and Objectives

Upon completion of this course, participants will be able to:

1. Identify normal cognitive processes involved in memory and decision making.
2. Distinguish characteristics of normal aging from dementia.
3. Identify the pathogenesis for common types of dementia.
4. Differentiate the clinical presentation for different types of dementia including cognitive and physical symptoms.
5. Identify contemporary treatment strategies for individuals with dementia.
6. Compare pharmacologic management for different types of dementia.
7. Compare various cognitive screening tests.
8. Identify strategies to employ when implementing rehabilitation programs for individuals with dementia.
9. Define the role of exercise for individuals with dementia.
10. Identify emerging trends in the management of dementia.

Course Provider – Innovative Educational Services

Provider Contact Information – information@cheapceus.com

Course Instructor – Jodi Gootkin, PT, Med, CEAS

Financial/Non-financial Disclosure - Neither the Provider nor the Instructor have any financial or non-financial conflict of interest related to the presentation of this CE program.

Target Audience – Occupational Therapists, Occupational Therapy Assistants

OT Scope of Practice – Foundational Knowledge

Course Educational Level – This course is applicable for introductory learners.

Course Prerequisites – None

Instructional Method – Distance Learning – Independent; Asynchronous online video-based home study

Location - Cheapceus.com

Date – Continuously available on-demand

PD Activity Completion Requirements / Criteria for Issuance of CE Credits – Completion of viewing of 3 hour recorded video, and a score of 70% correct or greater on the course post-test.

Continuing Education Credits – Three (3) contact hours / .3 AOTA CEUs

Course Fee - \$34.95

Registration Information – No pre-registration required; available on-demand at Cheapceus.com

Special Needs Requests – Email: information@cheapceus.com or phone: 954-663-4101

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Refund Policy - Unrestricted 100% refund upon request. The request for a refund by the learner shall be honored in full without penalty or other consideration of any kind. The request for a refund may be made by the learner at any time without limitations before, during, or after course participation.



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INNOVATIVE EDUCATIONAL SERVICES

Dementia: Etiology, Assessment & Management

Presented By
Jodi Gootkin, PT, MED, CEAS
Jodiemail@comcast.Net

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Course Overview

- ▶ “Dementia: Etiology, Assessment & Management” presents contemporary information about various forms of dementia including Alzheimer’s disease, Lewy body, and Frontotemporal dementia. This course includes discussion of pathogenesis, pharmacologic management and therapeutic considerations for patients with these conditions.

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Course Rationale

- ▶ The purpose of this course is to provide participants with contemporary information about the dementia. Rehabilitation professionals can use this information when implementing their treatment programs to address the specific needs of individuals effected by these conditions.

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Goals and Objectives

1. Identify normal cognitive processes involved in memory and decision making.
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- ▶ No conflict of interest exists for the presenter or provider of this course.

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Course Outline and Schedule

Topic	Time
Cognition	0:00-0:15
Contributors to Brain Health	0:16-0:20
Mild Cognitive Impairment	0:21-0:25
Dementia vs. Normal Pressure Hydrocephalus	0:26-0:30
Vascular Cognitive Impairment and Dementia	0:31-0:40
Alzheimer’s Disease Pathogenesis	0:41-0:50
Interactive Discussion of Clinical Applications	0:51-0:60
Clinical Presentation	1:01-1:10
Management Strategies	1:11-1:20
Lewy Body Dementia	1:21-1:35
Dementia with Lewy Bodies vs. Parkinson’s Disease Dementia	1:26-1:35
Rehabilitation Considerations	1:36-1:40
Frontotemporal Dementia	1:41-1:50
Interactive Discussion of Clinical Applications	1:51-2:00
Assessment Tools for Individuals with Dementia	2:00-2:15
Rehabilitation Considerations and Strategies	2:16-2:30
Fall Risk Reduction and Safety	2:31-2:45
Emerging Research	2:46-2:50
Interactive Discussion of Clinical Applications	2:51-3:00

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How To Obtain CEUs For This Course

- ▶ Course review and summary for post test at the end of the webinar.
- ▶ After watching the video go to **cheapceus.com**
- ▶ Complete the post test with score of at least 70%
 - ▶ May be retaken multiple times
- ▶ Submit online payment for course
- ▶ Print certificate



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Course Post Test

- ▶ Slides with “Consider This” icon in bottom right corner will be helpful in completing the post-test.

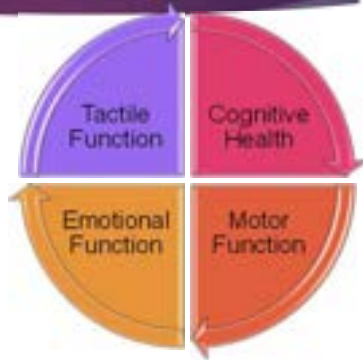


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Brain Health

- ▶ How well an individual's brain functions across several areas that can be affected by age related changes, injury, disorders, and disease.

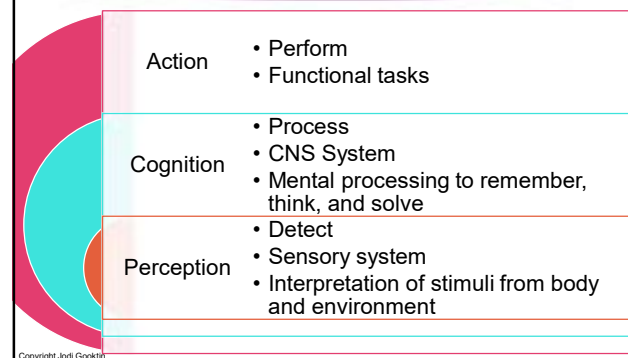


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National Institute on Aging, Cognitive health and older adults.
<https://www.nia.nih.gov/health/cognitive-health-and-older-adults>

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Interacting With Our Environment



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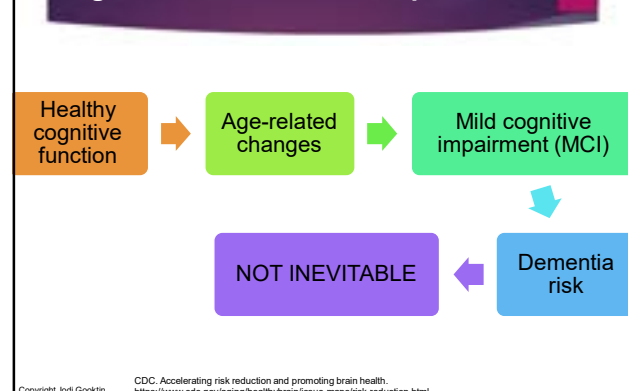
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Neurocognitive Domains

Complex attention	sustained attention, divided attention, selective attention, processing speed
Executive ability	planning, decision making, working memory, responding to feedback/error correction, overriding habits/inhibition, mental flexibility
Language	expressive and receptive
Learning and memory	immediate, recent, recognition, very long-term
Perceptual motor-perceptual ability	visual perception, visuoconstructional, perceptual-motor, praxis, gnosis
Social cognition	recognition of emotions, theory of mind

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Cognition Across the Life Span



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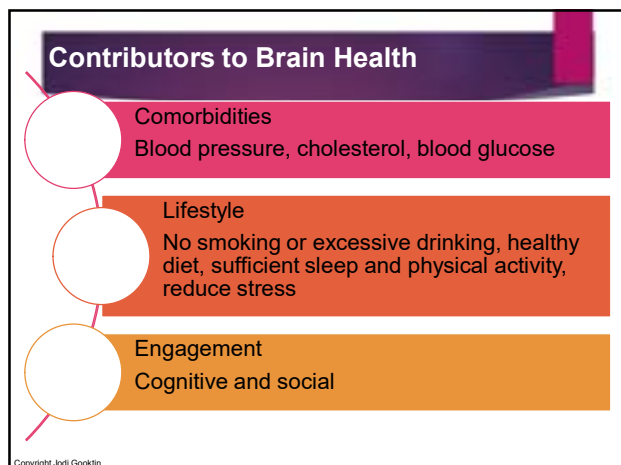
CDC, Accelerating risk reduction and promoting brain health.
<https://www.cdc.gov/aging/healthybrain/issue-maps/risk-reduction.html>

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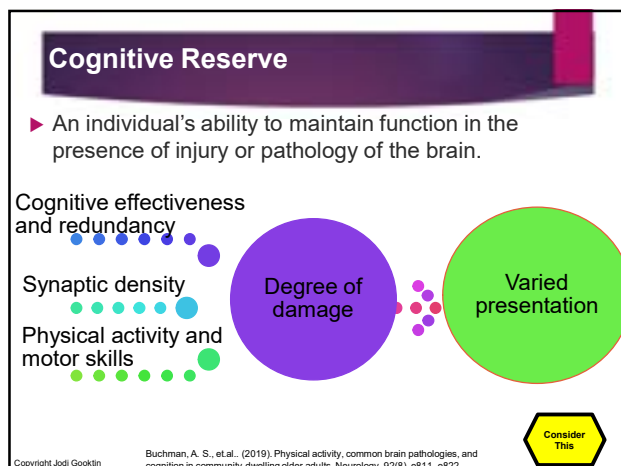
Physical Activity Outcomes

Cohort	Intervention	Outcome
Mild cognitive impairment	Physical therapy including aerobic, strengthening, and balance interventions with dual-tasking and function	Improved gait, balance, and cognition
Vascular dementia		PDD not included
Alzheimer's disease		
Dementia with Lewy bodies		

Longhurst, J., et al. (2020). Physical Therapy for Gait, Balance, and Cognition in Individuals with Cognitive Impairment: A Retrospective Analysis. Rehabilitation research and practice, 2020.

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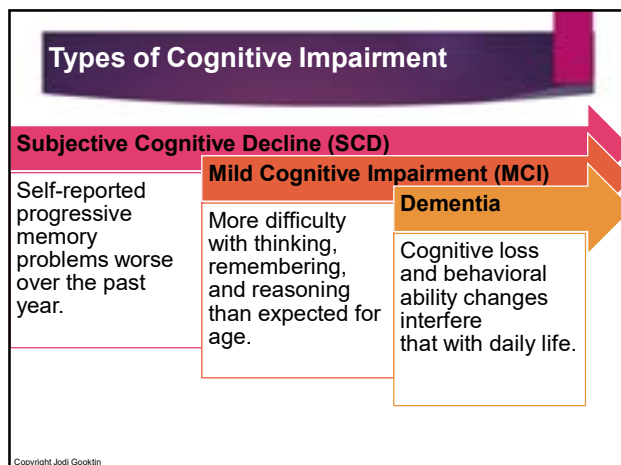
Recreational Activity Outcomes

Cohort	Intervention	Outcome
Middle-aged females longitudinal study	Intellectual, artistic, manual, club, religious activities	Cognitive activity ↓ total dementia and Alzheimer's disease risk
	Inactive, light, regular, or intense physical activity participation	Physical activity ↓ mixed and vascular dementia risk

Najar, J., et al. (2019). Cognitive and physical activity and dementia: A 44-year longitudinal population study of women. Neurology, 92(12), e1322-e1330.

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Mild Cognitive Impairment (MCI)

- Mild but detectable cognitive difficulties that do not limit the individual's ability to function independently.
- Characterized by forgetfulness, difficulty concentrating, challenges with problem-solving that is more significant than expected for the individual's age.
- Compensatory strategies typically implemented by individual who is aware of deficits.

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MCI Management

- ▶ Healthy lifestyle strategies
- ▶ Exercise
- ▶ Socialization
- ▶ Cognitive interventions
- ▶ Pharmacologic management
 - ▶ Cholinesterase inhibitors

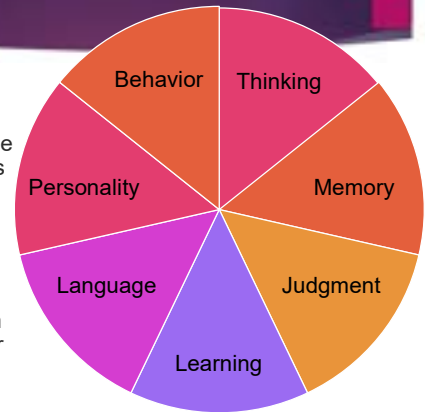
Petersen, R. C., et al. (2018). Practice guideline update summary: Mild cognitive impairment: Report of the Guideline Development, Dissemination, and Implementation Subcommittee of the American Academy of Neurology. Neurology, 90(3), 126-135.

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Dementia

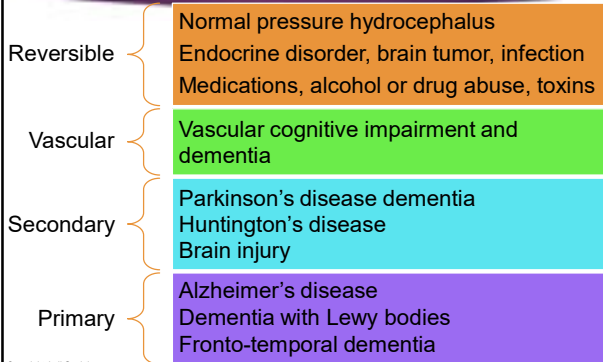
- ▶ Collection of symptoms indicative of mental decline that interferes with an individual's daily functioning.
- ▶ Different than depression or delirium.



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Etiology of Dementia



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Normal pressure hydrocephalus

- ▶ Cerebrospinal fluid accumulation in brain ventricles may be related to trauma, infection, or disease.
- ▶ Often misdiagnosed - symptoms similar to other disorders.
 - ▶ Progressive mental impairment, gait deviations, and incontinence
- ▶ Early diagnosis and shunt placement for good recovery.

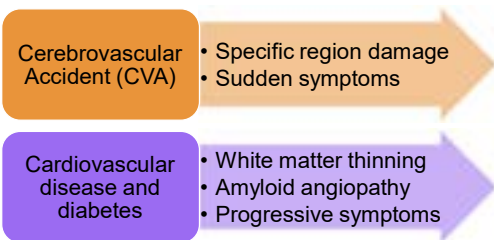
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National Institute of Neurological Disorders and Stroke. Normal pressure hydrocephalus information page. <https://www.ninds.nih.gov/disorders/Al-Disorders/Normal-Pressure-Hydrocephalus-Information-Page>

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Vascular Cognitive Impairment and Dementia (VCID)

- ▶ Dementia caused by vascular events in the brain.
- ▶ Can occur alone or alongside Alzheimer's disease.



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VCID Clinical Presentation

- ▶ Impaired organization, attention, problem solving, and memory
- ▶ Slowed thinking
- ▶ Personality and behavior changes
- ▶ Difficulty with language

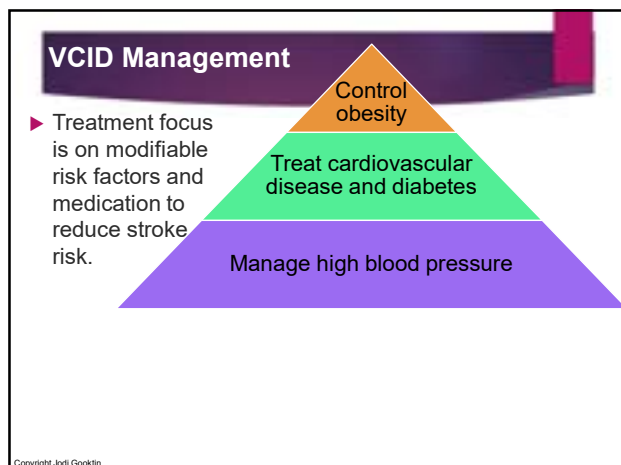
Alzheimer's Disease more memory loss

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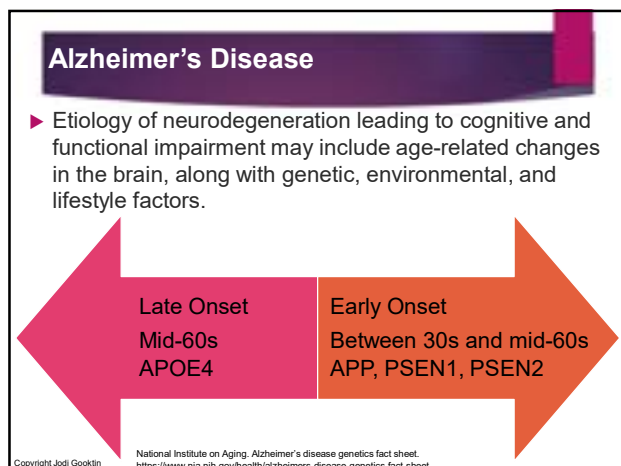
VCID Research

Intervention	Outcome
Intensive HTN management	Appears to reduce MCI risk Less white matter lesions
Midlife vascular risk assessment	Tobacco use, diabetes, prehypertension, HTN associated with higher incidence.

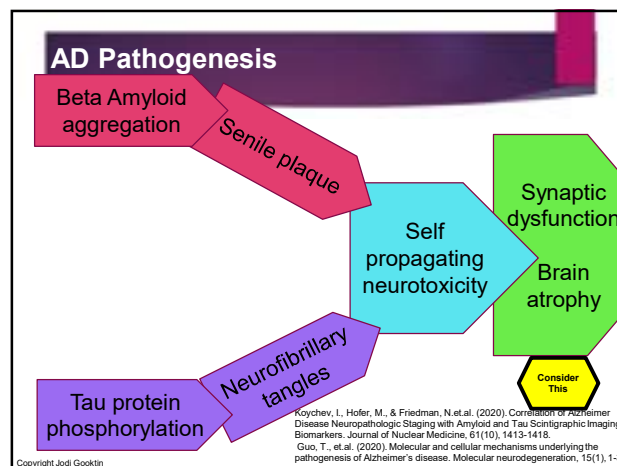
SPRINT MIND Research Group, Williamson, J., et al. (2019). Effect of Intensive vs Standard Blood Pressure Control on Probable Dementia: A Randomized Clinical Trial. JAMA, 321(6), 553-561.
Gottesman, R., et al. (2017). Associations between midlife vascular risk factors and 25-year incident dementia in the Atherosclerosis Risk in Communities (ARIC) cohort. JAMA neurology, 74(10), 1246-1254.

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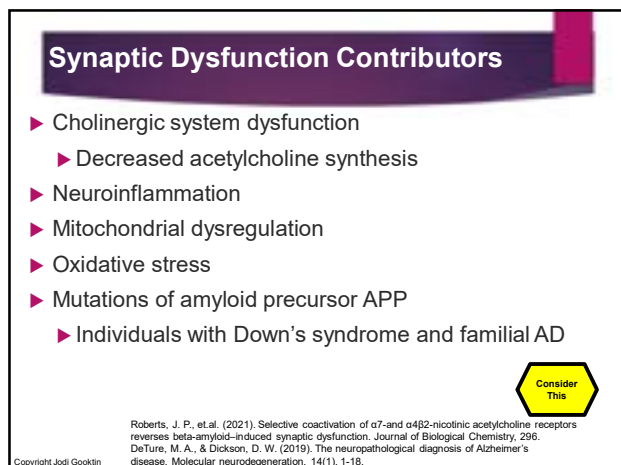
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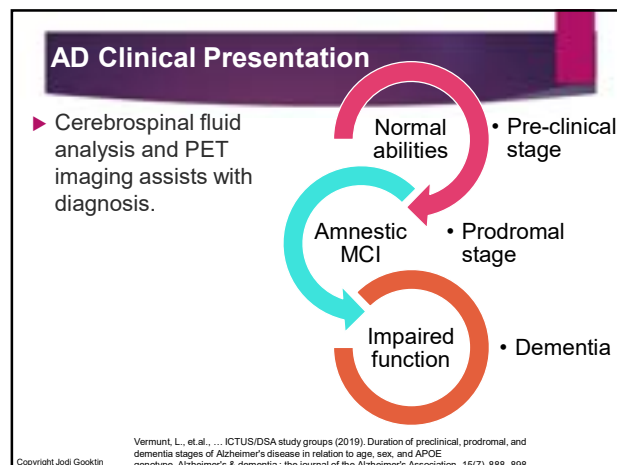
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Risk Reduction Behaviors

- ▶ Not smoking
- ▶ High level of physical activity
- ▶ Light-to-moderate alcohol consumption
- ▶ Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) Diet
- ▶ Late-life cognitive engagement

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Dhana, K., et al. (2020). Healthy lifestyle and the risk of Alzheimer dementia: Findings from 2 longitudinal studies. *Neurology*, 95(4), e374-e383.

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Stages of AD

- Early stage – Mild**
 - Independent functioning
 - Memory lapses, word finding, difficulty planning
- Middle stage – Moderate**
 - Assistance required, reasoning challenges
 - Behavior, sleep, bowel and bladder changes
 - Language and sensory impairment
- Late stage – Severe**
 - Unable to respond to environment
 - Progressive communication and mobility impairment

Alzheimer's Association. Stages of Alzheimer's. <https://www.alz.org/alzheimers-dementia/stages>

National Institute on Aging. Alzheimer's Disease Fact Sheet. <https://www.nia.nih.gov/health/alzheimers-disease-fact-sheet>

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Four A's of Alzheimer's Disease

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Pharmacologic Management

- ▶ Cholinesterase inhibitors
 - ▶ Anticholinergic agents may counteract effectiveness
- ▶ NMDA antagonists
- ▶ Tau targeting agents
- ▶ Beta-amyloid-targeted agents
 - ▶ Modify deposition in preclinical stage
 - ▶ Limit future plaques
- ▶ Monitor patients taking antipsychotics for signs of stroke.

Dyer, A. H., et al. & NILVAD Study Group. (2020). Is Ongoing Anticholinergic Burden Associated with Greater Cognitive Decline and Dementia Severity in Mild to Moderate Alzheimer's Disease?. *The Journals of Gerontology: Series A*, 75(5), 987-994.

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Aducanumab

- ▶ Appears to reduce amyloid plaques
- ▶ Side effects
 - ▶ Amyloid-related imaging abnormalities (ARIA)
 - ▶ Headache
 - ▶ Falls
 - ▶ Allergic reaction

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Exercise and AD

- ▶ Physical activity may slow the disease progression and allow individuals to remain more independent for a longer period of time.

Greteman, M. (2021). Alzheimer's disease and exercise: A review of exercise protocols for use in AD treatment. Iowa State University Digital Repository.

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Aerobic Training	
Intervention	Outcome
Early stage AD Aerobic exercise vs. strengthening and stretching	Equivalent cardiorespiratory gains Improved function No cognitive changes Reduced hippocampal atrophy
APOE4 gene carriers Human and animal studies	Improved memory and neuropsychiatric symptoms Reduced amyloid angiopathy Appears to improve cognition

Morris, J. K., et al. (2017). Aerobic exercise for Alzheimer's disease: A randomized controlled pilot trial. PLoS one, 12(2), e0170547.
Tokgoz, S., & Claassen, J. (2021). Exercise as Potential Therapeutic Target to Modulate Alzheimer's Disease Pathology in APOE ε4 Carriers: A Systematic Review. Cardiology and therapy, 10(1), 67-88.

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Resistance Training	
Intervention	Outcome
Animal studies Weighted stair climbing	Improved cognitive performance Reduced frontal cortex and hippocampus pathologic changes
Mild Dementia strengthening and vigorous aerobic training	Increased peak VO2 Decreased neuropsychiatric symptoms Higher mental speed and attention

Liu, Y. et al. (2020). Short-term resistance exercise inhibits neuroinflammation and attenuates neuropathological changes in 3xTg Alzheimer's disease mice. Journal of Neuroinflammation, 17(1), 1-16.
Sobol, N. A., et al. (2018). Change in fitness and the relation to change in cognition and neuropsychiatric symptoms after aerobic exercise in patients with mild Alzheimer's disease. Journal of Alzheimer's Disease, 65(1), 137-145.

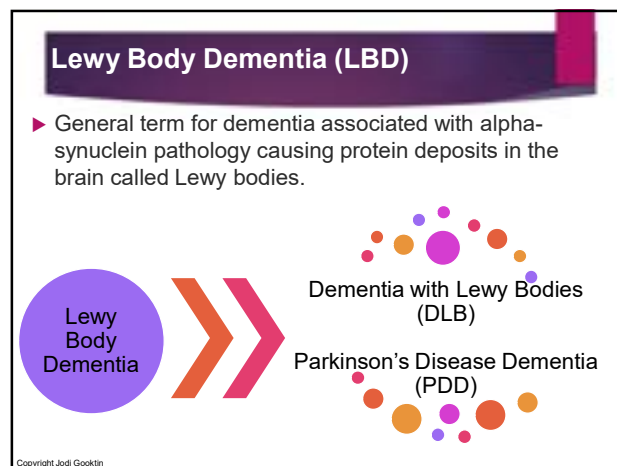
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Lewy Bodies	
<p>► Accumulation of alpha-synuclein in organs aggregates to create Lewy bodies leading to neurodegeneration.</p>	
Cortex	<ul style="list-style-type: none"> • Cognitive impairment • Executive, visuospatial, behavior
Brainstem	<ul style="list-style-type: none"> • Autonomic nervous system • Bowel/bladder, sleep, BP, mood
Substantia Nigra	<ul style="list-style-type: none"> • Extrapyramidal System • Motor impairment, tremors, rigidity
Gastrointestinal System and Heart	<ul style="list-style-type: none"> • Constipation

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Dementia with Lewy Bodies (DLB) Pathogenesis	
<p>► Genetic and biologic factors</p> <p>► Lewy body formation in brainstem and cortex</p> <p>► Neurotransmitters diminished</p> <p>► Acetylcholine – memory and learning</p> <p>► Dopamine – motor and nonmotor symptoms</p>	

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DLB Clinical Presentation	
<p>Cognitive</p> <ul style="list-style-type: none"> Visual hallucinations Concentration, attention, alertness diminished Disorganized thinking and confusion Impaired memory Difficulty with language and numbers 	<p>Non-Motor</p> <ul style="list-style-type: none"> Incontinence Constipation Blood pressure Hyposmia Thermoregulation <p>Motor</p> <ul style="list-style-type: none"> Parkinsonism Bradykinesia Micrographia Resting tremor Hypophonia

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DLB Sleep Disturbance

- ▶ Sleep disorders may often go undiagnosed and can increase daytime confusion and behavioral symptoms.
 - ▶ Somnolence
 - ▶ Insomnia
 - ▶ REM sleep behavior disorder
 - ▶ Restless leg syndrome

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DLB Behavior and Mood Symptoms



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DLB Management

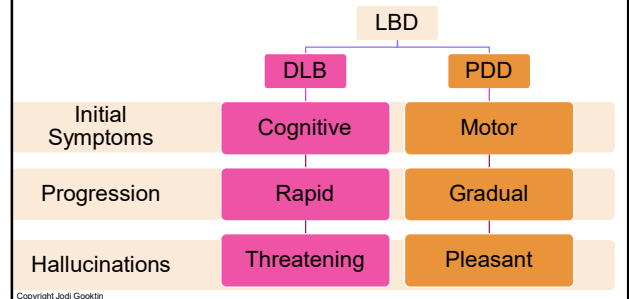
- ▶ Pharmacologic management of symptoms
 - ▶ Carbidopa-levodopa - Parkinsonism
 - ▶ Cholinesterase inhibitors – psychiatric symptoms
- ▶ Antipsychotic medication sensitivity
- ▶ Orthostatic hypotension
 - ▶ Diet, compression garments, sleep position

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Clinical Presentation Distinction

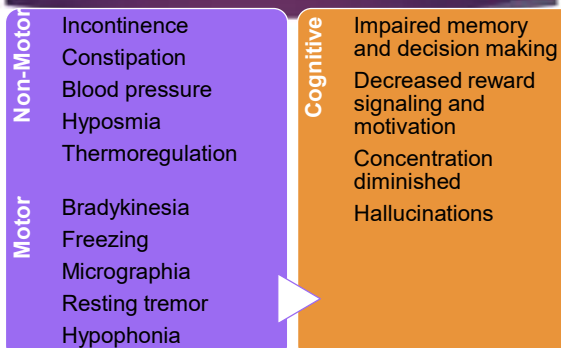
- ▶ The most prominent factor distinguishing DLB from PD is timing of when symptoms appear.



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PDD Clinical Presentation

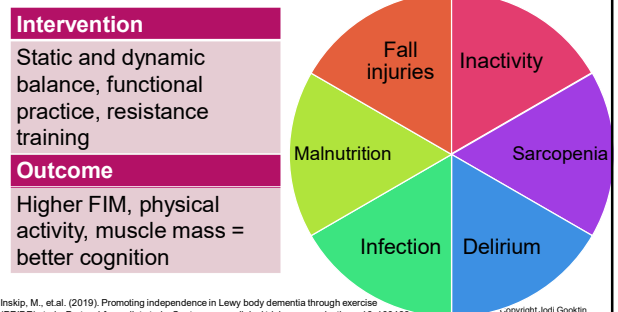


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LBD Rehabilitation Considerations

- ▶ Address aspects of frailty including intrinsic and extrinsic attentional strategies for motor impairments.



Inskip, M., et al. (2019). Promoting independence in Lewy body dementia through exercise (PRIDE) study: Protocol for a pilot study. *Contemporary clinical trials communications*, 16, 100466.

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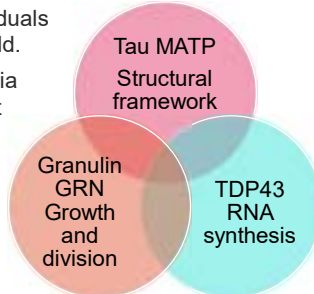
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Frontotemporal Dementia Pathogenesis

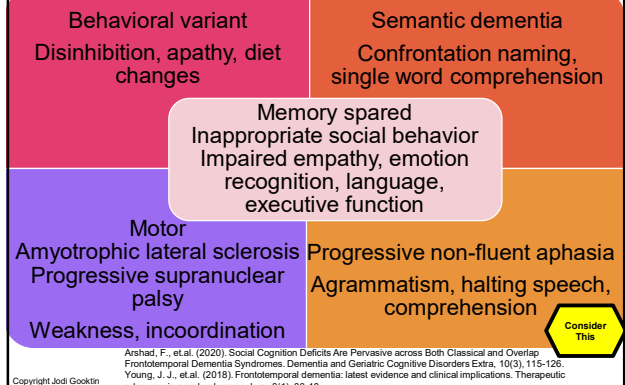
- ▶ A group of disorders with proteinopathy of the frontal and temporal lobes leading to neurodegeneration.
- ▶ Typically occurs in individuals younger than 60 years old.
- ▶ Family history of dementia and autosomal dominant inheritance pattern have been identified.



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FTD Subtypes Clinical Presentation



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FTD Rehabilitation Considerations

- ▶ Accept rather than challenge behavior
- ▶ Offer specific choices
- ▶ Maintain a regular schedule
- ▶ Address compulsive eating
- ▶ Implement communication strategies
 - ▶ Communication book and word lists
- ▶ Functional training and attention strategies for movement impairments.

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Assessment Tools for Individuals with Dementia

- ▶ Cognitive Screening
 - ▶ Clock Drawing Test
 - ▶ Memory Impairment Screen
 - ▶ Montreal Cognitive Assessment
 - ▶ Mini-Mental State Exam
 - ▶ Mini-Cog
- ▶ Disease Progression and Staging
 - ▶ Functional Assessment Staging Scale
 - ▶ Global Deterioration Scale
- ▶ Pain Assessment

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Clock Drawing Test (CDT)

- ▶ Asks patient to draw clock showing specific time followed by copying a pre-drawn clock.
- ▶ Assesses visuospatial and praxis abilities.
- ▶ Digital version (dCDT) may provide information on processing speed and working memory.

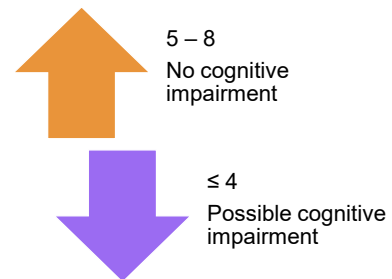
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Dementia Care Central. (2020). Alzheimer's / Dementia Clock-Drawing Test: Everything Caregivers Need to Know. <https://www.dementiacarecentral.com/alzheimers-clock-test/>

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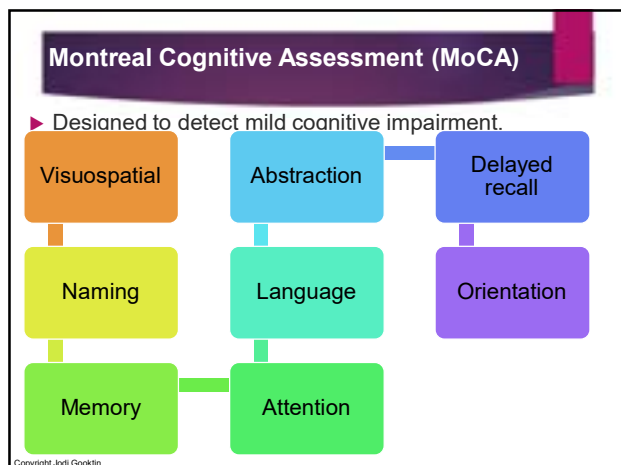
Memory Impairment Screen (MIS)

- ▶ Measures categorizing and recalling four items through free and/or cued recall.

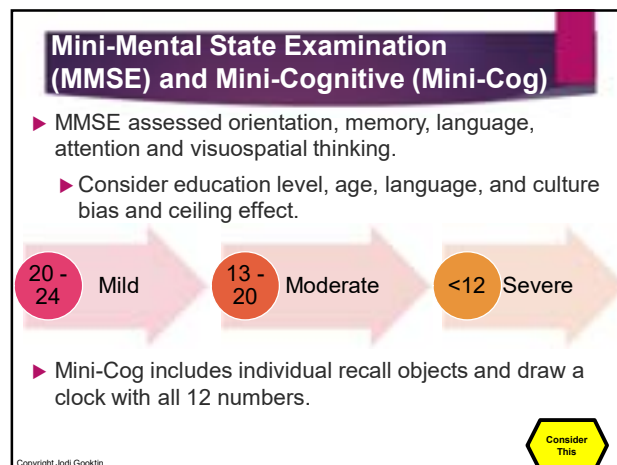


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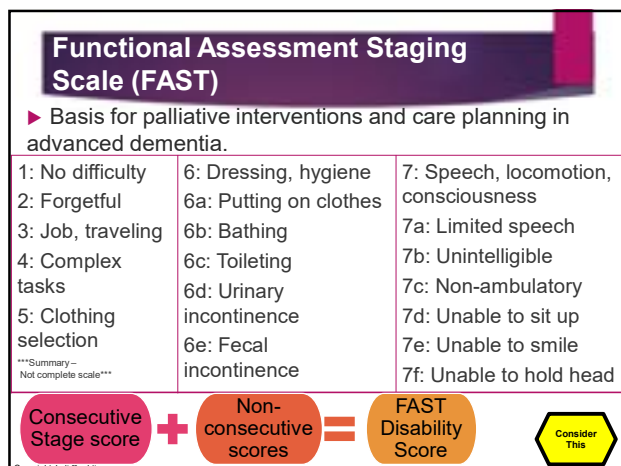
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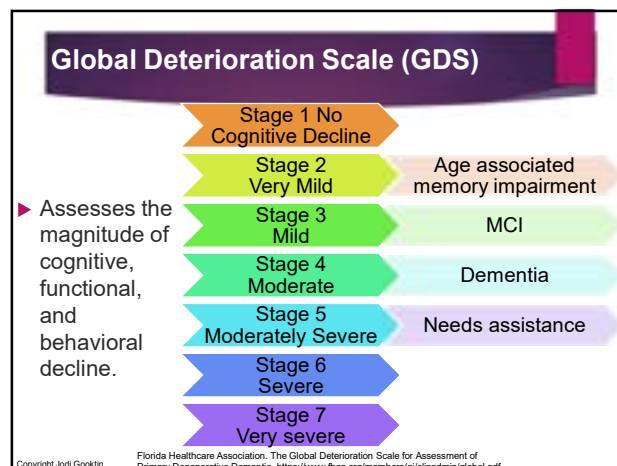
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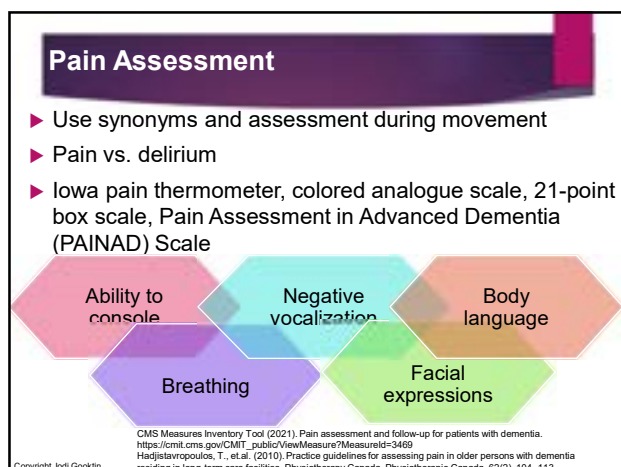
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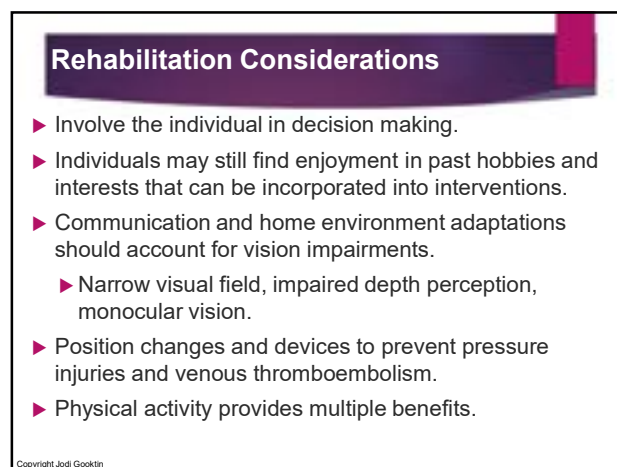
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Functional Training

- ▶ New learning can still occur.
- ▶ Frequent practice of meaningful tasks.
- ▶ Replicate performance environment.
- ▶ Use parallel visual cues.

Implicit Memory
Procedural
Not conscious recall
"How to"

Explicit Memory
Episodic
Conscious recall
Facts personal events

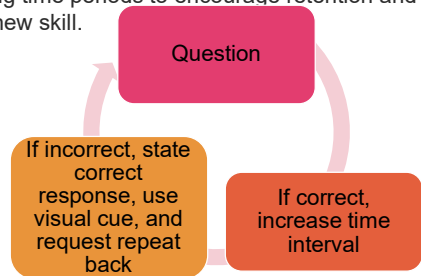
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Spaced Retrieval Technique (SR)

- ▶ Procedural memory trained by using repeated recall over expanding time periods to encourage retention and retrieval of a new skill.



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Patient and Caregiver Education

- ▶ Encourage
 - ▶ Management of comorbidities
 - ▶ Emergency preparedness
- ▶ Increase Awareness
 - ▶ Financial exploitation
- ▶ Provide resources to support
 - ▶ Behavioral health needs
 - ▶ Social stigma
 - ▶ Caregiver's health and well-being

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Dietary Supplements

- ▶ Polyphenols and cat's claw appear to reduce beta-amyloid fibrils and tau filaments.
- ▶ Consumers must remain vigilant as products may contain unapproved ingredients and/or be misbranded.

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Communication Strategies

- ▶ The condition is progressive; forgiveness and not taking interactions personally is important.

Do's

Don'ts

Comprehension time

Brief Repeat

Suggest Distract

Physical contact

Open ended questions

Remind of losses

Remember when...?

Scold Insist

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Agitation

- ▶ Shift perspective to consider agitation as unmet need or lack of understanding.

Intervention and Outcome

Severe dementia – sedentary associated with agitation/aggression

Horticulture decreased agitation, increased engagement and activity level.

Effective: Music therapy and dementia care mapping

Not effective: therapeutic touch, aromatherapy, light therapy

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Hallucinations

- ▶ Hallucination: hearing, seeing, smelling, or feeling things that are not really there.
- ▶ Delusion: false beliefs that the person thinks are real.
- ▶ Paranoia: belief others are mean, lying, "out to get me."
- ▶ Rule out another illness or medicine causing symptoms.

- Don't argue - comfort
- Ensure safety
- Remove upsetting stimuli
- Change of environment

Hallucinations and Delusions

- Try not to react
- Reassure safety
- Gentle touch
- Engagement distraction

Paranoia



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Fall Risk Reduction Strategies

- ▶ Simplify the home
- ▶ Contrasting colors edging
- ▶ Non-skid strips on floor
- ▶ Label rooms
- ▶ Avoid overstimulation
- ▶ Vestibular assessment

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Safety

- ▶ Signs with simple written instructions and safety cues.
- ▶ Childproof plugs/latches, automatic shut off stove, color code faucets, disconnect garbage disposal.
- ▶ Secure cleaning alcohol, medications, weapons.
- ▶ Check for food spoilage, limit access to anything that can be mistaken for food.



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Sundowning

- ▶ Restlessness, agitation, or confusion as daylight begins to fade in the evening.
- ▶ Plan activities and exercise during this time as distractions.
- ▶ Make early evening a quiet time.
- ▶ Close blinds at dusk to minimize shadows.



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Wandering

- ▶ Lapping, random, pacing patterns of locomotion associated with disorientation and eloping.
- ▶ Person should have ID on them.
- ▶ MedicAlert® + Alzheimer's Association Safe Return® Program
- ▶ Limit situations that cause disorientation or agitation.
- ▶ Ensure basic needs are met.



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Strategies to Limit Wandering

- ▶ Keep signs of departure out of sight.
- ▶ Locked doors and doorknob covers should be used only when a caregiver is present.
- ▶ Simple door signs and visual stop cues to deter exit.
- ▶ Pictures, curtains, dark rug on light floor, mirror, murals.



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Early Diagnosis Emerging Research

- ▶ Biofluid based biomarkers
 - ▶ Amyloid
 - ▶ PDGFR β may indicate compromised blood brain barrier
- ▶ Computer-based self-administered assessment of multiple cognitive domains.
- ▶ Neuroimaging to distinguish involved brain regions.

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Gait Analysis Predictive Value

- ▶ Gait analysis with wearable technology may identify gait variances with predictive value for mild AD.
- ▶ Gait alterations may be evident years before diagnosis.
- ▶ Consider including cognitive assessment for patients being evaluated for fall risk.

Dementia	Gait Characteristics
AD or FTD	Larger step width with counting backward Varied cycle time with animal reciting
VCID or LBD	Gait at usual speed wider steps Slower gait speed with animal reciting

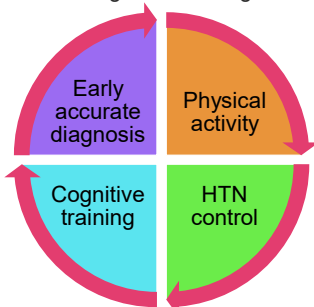
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Future Research

- ▶ Exploration of lifestyle changes to prevent or delay Alzheimer's and age-related cognitive decline.



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Conclusion

- ▶ Several disease processes lead to cognitive impairments associated with dementia. Distinguishing the presentations and implementing appropriate physical activity, communication, and environmental modification strategies can enhance quality of life for individuals and their caregivers.

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1. Physical activity can help improve _____ which is the ability to maintain function in the presence of brain injury or pathology.

- A. Spaced retrieval
- B. Mild cognitive impairment
- C. Cognitive reserve
- D. Self efficacy

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2. Which of the following biologic factors is NOT associated with the pathogenesis of Alzheimer's disease?

- A. Decreased acetylcholine synthesis
- B. Aggregation of beta-amyloid
- C. Tau neurofibrillary tangles
- D. Lewy bodies

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3. An individual demonstrating word finding challenges, planning difficulty, and misplacing things in odd places would be considered in what stage of Alzheimer's disease?

- A. Pre-clinical
- B. Mild
- C. Moderate
- D. Severe

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4. What condition impacting memory and thinking also presents with movement symptoms of parkinsonism?

- A. Mild cognitive decline
- B. Frontotemporal dementia
- C. Alzheimer's disease
- D. Dementia with Lewy bodies

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5. What characteristics are common among the subtypes of frontotemporal dementia?

- A. Forgetfulness and memory impairment
- B. Inappropriate social behavior and impaired empathy
- C. Tremors and bradykinesia
- D. Hallucinations and paranoia

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6. A score of _____ on the Mini-Mental State Examination is related to severe dementia.

- A. 25 and above
- B. 20-24
- C. 13-20
- D. Less than 12

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7. What tool assesses level of disability as the basis for palliative interventions and care planning for individuals with advanced dementia?

- A. GDS
- B. FAST
- C. PAINAD
- D. MoCA

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8. Hearing, seeing, smelling, or feeling things that are not really there defines what symptom?

- A. Hallucination
- B. Paranoia
- C. Delusion
- D. Persecution

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9. What is the term for restlessness, agitation, irritability, or confusion that worsens during the evening?

- A. Sundowning
- B. Wandering
- C. Daylight decline
- D. Delusional reactivity

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10. Which of the following is NOT a strategy to employ to limit wandering?

- A. Hang scenic posters on doors
- B. Use doorknob covers when caregiver is present
- C. Hang simple instructions on how to open exit doors
- D. Keep keys, suitcases, coats, and signs of departure out of sight

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