

Working with Clients Who Have Specific Neurological Conditions

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Normal and pathologic aging

- Effects of normal aging on neurologic function
- Common pathologies associated with aging

Effects of Age on Postural Control

Stiffness - contractile and non

Pain

Reaction speed

Cognition

Vision

Experience

Learned non-use

Fear

Loss of power

Normal aging: Nervous system

Changes in the nervous system (NS):

Reaction time (central processing, conduction, and vision)

Strength and Power

Conduction velocity

Attention

Learned non-use (environmental disuse/affordances)

Flexibility

Influences of the body ***onto the nervous system*** - real and assumed

Normal aging: Nervous system

Changes in the nervous system (NS):

Reaction time (central processing, conduction, ar

Strength and Power

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Flexibility

Influences of the body, *nervous system* - real and assumed

Balance is impacted in ALL of these

Normal aging: Neuromuscular and Musculoskeletal effects

Loss of Type I and II...and a conversion of Type II to I

Death of skeletal mm. cells, replaced by connective tissue, fat

Reduction in NM recruitment capacities - motor unit

Increased stiffness in viscoelastic tissue

“Normal” adulthood: Motor Control

Maximizing skill and fitness

What is aging?

What can be mitigated?

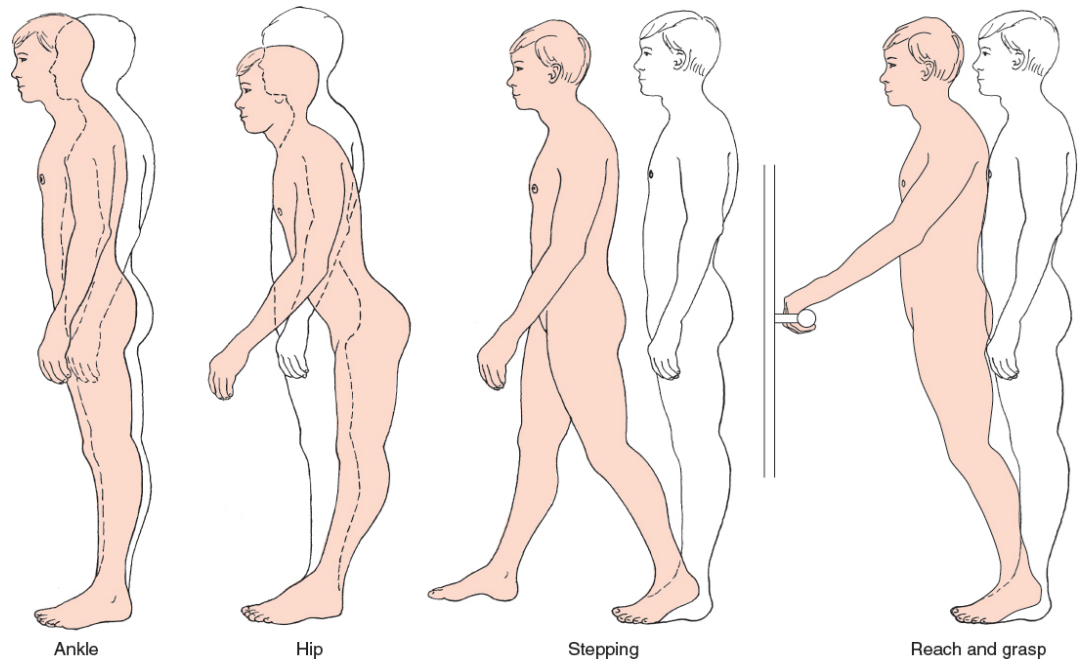
Reserve hypothesis?

What part of aging is “a function of function”?

What part of aging is a function of expectations (societal)?

Strategies in Postural Control

- Ideal strategies
- Environmental influences
- Task influences
- Personal influences
- Age influences



Pathologic aging

- Common conditions associated with aging:

Arthritis

Visual, hearing or sensory impairment (may be neuropathy)

Sarcopenia (loss of muscle cells)

Cancer

Congestive Heart Failure

Of course, as referenced, cognitive impairment

Stroke

- Stroke can affect any/all functions from a motor, sensory, cognitive or perceptual basis
- Spontaneous recovery often occurs in the first 3 months after stroke
- Neuroplasticity (new connections replacing or compensating for lost function) can occur for the next 5+ years after stroke

Stroke

- Often, people with stroke (PwS) recover to an extent, then lose some function due to nonuse
- We can prevent and reverse nonuse by:

Staying consistently active

Challenging all attributes of fitness: physical and cognitive

Dual task programming

Following the principles of engagement

Parkinson Disease

- Persons with Parkinson Disease (PwPD) may slow disease progression through exercise
- Recall, the FITTVP principles of dosage
- PwPD may have motor and non-motor issues
- PwPD may have one of several subtypes

Tremor Dominant (TD)

Postural Instability Gait Difficulty (PIGD)

Multiple Sclerosis

- Persons with Multiple Sclerosis (PwMS) may have brain, spinal cord, or CN lesions
- This can lead to changes in vision, cognition, sensation, coordination, and strength
- PwMS are frequently at high fall risk
- PwMS may fatigue quickly
- PwMS must and can engage in exercise
- PwMS may have a delay in response speed

Concussion

- Early light exercise is highly recommended
- Limit but do not eliminate sensory stimuli
- Subclassify concussion by symptoms and treat
- Dual tasking in later stages prior to return
(work, school, sport, driving)
- Blood flow, neurotransmitters, chemical imbalances can last for up to 1 year after injury

Neuropathy

- Millions of people suffer from the dozens of forms of neuropathy
(Diabetic, B12, inherited, trauma, toxic, autoimmune, infectious, unknown, arthritic)
- Pain, imbalance, weakness
- Treatment is condition-specific
- Balance, exercise, compensation, protection

Vestibulopathy

- Physiologic (misplaced crystals, hydrops)
- Structural (temporal bone, fistula)
- Medication-induced
- Cancer-related
- Stroke
- Infectious
- Mixed-combination with anxiety
- Environmental (visual, traveling)

Frailty

- With proper nutrition, medical stability, and motivation, most people can make large gains
- Protein intake important: hydration, kidneys
- Dosage to start – Frequency > intensity
- Gamification, video journal

Up Next

- Next, we will discuss ***Motivating clients with depression***