

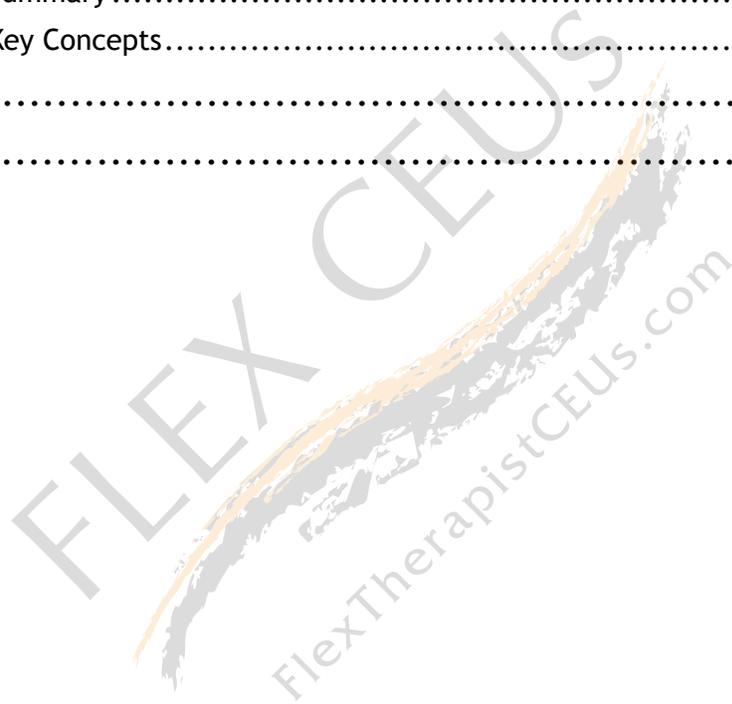
FLEX CEUs



The Complex Geriatric Patient



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Introduction

Physical Therapy can be a major implementation for the geriatric population. It can assist in improving and maintaining independence, strength, balance, safety, and quality of life, amongst other considerations. There are multiple areas for contemplation, including pharmacological side effects, the use of assistive devices, and alterations to plan of care due to pain or physical limitations. Each patient should be properly assessed for individual needs and a specific, patient-centered plan of care should be determined. During the Physical Therapy process, reassessments should be performed to ensure that the patient is continuing on a beneficial path. This course will discuss the aging process, exercise for the geriatric patient, family, and social considerations, and many other issues relevant to providing proper therapy for seniors.

Section 1: Effects of Aging on Patients and the Implementation of Exercise

As a person ages, there are many physical, psychological, mental, and social changes that occur that can negatively affect the patient and their quality of life. Physical Therapy can be helpful to help patients adjust to these changes and improve the general well-being of their lives. A steady, systematic exercise program can help with stress relief, strengthening, balance, and safety issues, as well as promote social interaction in either group exercise sessions or simply by promoting the ability to be more independent and thus able to leave their house to engage in enjoyable activities.

Mental changes in someone who is aging are normal and to be expected. In the course of the aging process, the mind becomes less flexible and nimble, and the memory tends to decline. Age-related changes in how the brain works as a person ages are called **cognitive aging**. While **dementia** and **mild cognitive impairments (MCI)** are both common for those who are aging, even those who do not suffer from these conditions may experience subtle cognitive changes. Some cognitive abilities such as vocabulary are resilient to brain aging and may even improve with age. This is due to the fact that skills such as vocabulary are known as **crystallized intelligence**. Crystallized abilities include vocabulary and other skills that are overlearned, well-practiced, and very familiar. Crystallized abilities remain stable or gradually improve through the sixth and seventh decades of life. Since crystallized abilities are due to the accumulation of skills based on one's life experiences, older adults tend to perform better at tasks requiring these types of skills when compared to others. This can be helpful for those in Therapy because it may be more useful for the Therapist to integrate activities that the patient is familiar with, such as cooking, mechanical

work, house cleaning, yard work, or other interests to minimize confusion and difficulty in completing tasks in those with more advanced memory issues.

Fluid intelligence, on the other hand, refers to abilities concerning problem-solving and reasoning about things that are less familiar and not related to the normal, everyday activities that someone is used to performing or participating in. When faced with a novel situation, people may have more difficulty adapting as they grow older due to the difficulty with problem-solving that presents itself. Also known as fluid cognition, this means that as a person grows older, the innate ability to learn new information, solve problems, and process information tends to decline.

Executive function, processing speed, memory, and psychomotor ability are elements of fluid cognition. These abilities are shown to decline gradually over time, with a peak in the third decade of life then decline yearly afterward. This type of intelligence would make it more difficult for patients to learn new activities, especially activities that do not relate to things that the patient has performed in the past.

Although some decline is normal and expected, there will often be patients suffering from dementia, mild cognitive decline, or other dementia-related disorders including Alzheimer's Disease, Parkinson's Disease, Lewy Body Dementia (LBD), amongst others. Those who suffer from dementia-related diseases require a special skill set and some adaptations to provide a beneficial and successful therapy environment. Patience is key, as therapy must be simple and easy to follow. Repetitive exercises can also be helpful to assist the forgetful patient in repeating the activities over the exercise course.

There are notable changes in the brain in those who suffer from dementia-related diseases. The changes are both structural and chemical, and they react with one another to greatly affect the brain. As dementia progresses, the functional ability of the patient begins to decline. The senior will experience difficulty with speech, memory, reasoning, and independent functionality. With the progression of dementia, the brain undergoes a loss of volume, which means that the brain begins to shrink as brain cells die and tissue degenerates. This cell **apoptosis** results in an overall loss of volume and decreased functional ability.

Protein build-ups in the form of **amyloid plaques**, also known as protein clusters, gather between nerve cells. At the same time, twisted strands of proteins known as **tau tangles** gather inside nerve cells. These proteins build-ups and twisted strands of proteins firstly form in the areas of the brain responsible for memory, learning, and thinking. They then move on to affect other areas of the brain, continuing the destruction of the brain and nerve cells. When these tangles and plaques progress, there will be notable issues with the patients' daily functioning. Memory problems will worsen, and thought processes will decline. Behavior and personality changes will

begin, as well as confusion and related anger issues due to the patients' frustration. Tangles and plaques wreak havoc upon neurological connections. They interrupt the brains' connections. The brain sends electrical impulses along synapses between nerve cells. The ability of the neurons to send impulses between nerve cells is compromised, which results in cell death due to a decline in the cell's reception of much-needed nutrients.

With all this remodeling in the brain, the effects on the cognitive ability and physical function are evident. Patients will begin to suffer from memory loss, lack of orientation in time and place, speech and communication issues, difficulty organizing thoughts or relating these thoughts or desires, and from personality and behavioral changes. Dementia and related diseases often result in the death of the patient. The goal for Physical Therapists in caring for those with dementia or other cognitive declines due to age is to improve strength, balance, flexibility, functional ability, safety, and mobility.

There are many physical alterations that can be attributed to an aging body. Although some changes are self-evident, such as the appearance of wrinkles or graying hair, many changes are also internal. These changes can include the following;

- **Brain and nervous cells** - The changes to the brain regarding Tau Tangles and Amyloid Plaques have been mentioned above. Due to these changes, reactions, and reflexes slow, while distraction and confusion increase, and coordination is adversely affected.
- **Hearing and vision decline** - Hearing and vision loss have a negative impact on daily function and safety. The lens of the eyes stiffens, resulting in a change in color perception and difficulty seeing low light conditions. The eyes may be less capable of producing proper lubrication, which means that the lenses will become cloudier and vision will further decline. Common age-related eye problems include glaucoma, dry eyes, macular degeneration, diabetic retinopathy, and cataracts. Eye problems are dangerous to the elderly due to decreased ability to navigate surroundings. Patients should be educated on coping mechanisms such as removal of fall hazards like rugs, cords across floors, and clutter. Seniors may have difficulty navigating ledges or stairs due to being unable to see them. The application of a bright colored tape to the edges of these obstacles can assist the patient in identifying these edges and avoiding falls. In this instance, a bright neon green is helpful in that it calls the attention well of those with not only visual issues, but those with cognitive decline as well. Someone with Alzheimer's is better able to notice a bright green stripe on a stair edge, calling their attention to this edge and cueing them to step carefully. Neon green tape is a useful tool in therapeutic settings. Age-related hearing loss (**presbycusis**) is caused by the tiny hair cells inside the inner ear that begin to die. These hairs pick up sound waves and change

them into nerve signals that the brain interprets into sound. These hair cells do not regrow, so hearing loss caused by hair cell damage is permanent. Hearing loss can not only cause problems with communication, which can result in a marked increase in stress and frustration, it can also result in dangerous situations due to difficulty hearing in noisy environments and the inability to hear things like car horns, alarms, or other external stimuli. The patient should be encouraged to regularly visit optometrists and ear, nose, and throat (ENT) physicians for regular check-ups to monitor and track audio and visual decline, in order to prescribe assistive devices such as glasses and hearing aids to help keep the patient safe.

- **Cardiovascular** - As someone ages, blood vessels begin to lose elasticity and fatty deposits build up in arteries. This causes the heart to have to work harder to circulate the blood throughout the body. High blood pressure (**hypertension**) can present, as well as a hardening of the arteries (**atherosclerosis**). Hypertension can increase the risk of heart disease and stroke, and can lead to death. Atherosclerosis narrows the arteries, which limits the flow of oxygen-rich blood to organs and other parts of the body. This also causes heart attack, stroke, and death. The patient's heart rate, oxygen saturation rate, and blood pressure should be monitored frequently to ensure that the patient is not overworking. Cardiac output decreases, which results in there not being enough blood pumped by the heart to meet the needs of the body. This can cause **hypotension**, edema, low heart rate (**bradycardia**), or fast heart rate (**tachycardia**).
- **Bones** - When aging, the bones shrink in size and density (mass). This loss of bone density is known as osteoporosis. People are more prone to fractures because of the loss of density and fragility of the remaining bone tissues. The bones tend to lose calcium and other minerals that keep them strong. Reduced bone density can also result in postural abnormalities, and lead to pain, reduced mobility, and other musculoskeletal problems. The risk of injury increases with bone density loss due to changes in the gait pattern, instability, and loss of balance, which may result in falls. These falls of course have a high occurrence of broken bones due to the fragility of the bones. Exercise is vital to preserving bone density, however, high impact exercises and exercises that increase fall risks must be avoided. Exercises such as weight-bearing activities (walking), strengthening using free weights or exercise bands, and balance exercises are beneficial for those with bone density loss. A diet with adequate vitamin D and Calcium is also useful for preserving bone mass.
- **Joints** - With aging, joint movements become stiffer and less flexible. This is because the fluid inside the joints decreases while cartilage becomes thinner. Synovial fluid is the fluid inside joints that lubricates the joints for smooth movement. Synovial fluid contains high amounts of high molar mass hyaluronic acid (HA) molecules, which gives it the required viscosity for its function as a lubricant

solution. This allows it to naturally cushion the joints and other tissues. As someone ages, the size of the hyaluronic acid molecules decreases, which inhibits the ability to work as effectively in providing support cushioning and lubrication. Stiff and inflexible joints negatively affect patient mobility, which results in a less active lifestyle and decreased strength and endurance. This also increases the risk of falls due to instability with transfers and gait. The joint range of motion also tends to decrease with age. The spine tends to experience limited extension capabilities, resulting in a postural deficit, that can be dangerous with gait and stability. The hips and knees also tend to experience extension deficits, resulting in decreased stability with gait.

- ***Tendons and Ligaments*** - Ligaments also tend to shorten and lose flexibility, which makes joints feel stiff. Collagen is found throughout the body, and helps keep the body flexible as well as retain water for hydration. Collagen levels start to decline after about age 25. This decline can cause ligaments, tendons, and cartilage to become less flexible and more brittle. This again results in decreased flexibility. Exercise is necessary to slow or prevent issues with tendons and ligaments and maintain and improve flexibility.
- ***An overall decline in strength*** - The major cause of strength and muscle mass loss with the aging process is the decline of **anabolic hormones**, which results in a **catabolic** effect on muscles and bones. Anabolism is the building up aspect of metabolism, where catabolism is the breaking down aspect. Increased catabolism in the elderly means that metabolism declines, resulting in decreased energy-burning, weight gain, and decreased muscle mass. This can be counteracted by an exercise program to maintain and build strength.

Exercise can be beneficial to prevent age-related changes in muscles, bones, and joints, and has been shown to reverse these changes as well. Research shows that exercise can benefit the aging population by increasing or maintaining physical issues such as;

- ***Balance*** - improving balance is important to avoid falls, promote joint stability, and improve coordination.
- ***Joint flexibility and mobility*** - improving joint flexibility is necessary to avoid postural abnormalities, which can cause pain and increase safety due to proper mobility.
- ***Endurance*** - endurance declines with aging. Patients have difficulty performing activities of daily living, including housework, shopping, and walking around. Endurance training builds energy by increasing the breathing and heart rate.
- ***Muscle strength*** - Muscle strength tends to decrease with age, and strength is important to remain mobile and avoid injury.

- **Bone strength and density** - the decline in bone strength and density can cause postural abnormalities, musculoskeletal disorders, and increased pain. The loss of bone mass and strength also results in an increased risk of bone breakage.
- **Cognitive ability** - Physical activity is a protective factor for neurodegeneration, providing preventive abilities for cognitive decline. Exercise affects brain plasticity which has a beneficial effect on cognition and well-being.

There are many beneficial exercises that can be used for treating the elderly. Exercise and physical activity are good for everyone, including senior adults. As an older adult, regular physical activity is one of the most important things to do for good health. It can prevent many of the health problems that seem to come from aging. Exercise will help maintain muscle strength as well as build it, which ensures the continued level of activity to foster higher independence. It has also been shown that exercise can stave off and even reverse cognitive decline, which can be a common concern for the elderly. Seniors who engage in regular exercise also have a lowered risk of developing dementia disorders including Alzheimer's disease. There are four main types of exercise;

- **Aerobic**, or endurance, exercises increase the breathing and heart rate. Aerobic exercise for seniors can include brisk walking, jogging, or running, swimming, cycling, and gardening. Any activity that will cause the heart and breathing rates to increase can be a form of exercise. Water-based activities can be a great implementation for patients who experience hip and knee pain, as the water offloads weight from the joints while providing some resistance to increase the difficulty and to provide some resistance for exercise.
- Strength exercises make the muscles stronger. Strength training for the elderly can be beneficial in helping with the following disorders;
 - Treatment of frailty. Many elders suffer from frailty, the progressive weakening of the body due to age. Strengthening can help to stave off the weakening process.
 - Treatment of osteoporosis, which is a condition in which the skeletal material begins to weaken and deteriorate. This can cause deformities and fractures in the spine and hips. Strengthening exercises can reverse osteoporosis when patients participate in a therapeutic exercise program with adequate levels of weight-bearing.
 - Osteoarthritis or rheumatoid arthritis can also benefit from strengthening exercise. Arthritis attacks the joint cartilage and synovial membranes. Strengthening exercises increase strength and joint flexibility and have been shown to reduce joint pain. Strong muscles support and protect joints that are affected by arthritis.

Some ways to incorporate strength exercises into a balanced program for older adults are to introduce common exercises such as seated, lying, or standing exercises. These can be ankle pumps, hip flexion, hip abduction and adduction, knee flexion and extension. These can begin in a seated form and progress to standing to increase the difficulty and promote weight-bearing, which further encourages strengthening.

- Balance exercises help prevent falls. Balance exercises can reduce the risk of falls in the elderly, which are a major cause of injury, hospitalization, and decline in the elderly. For this reason, fall prevention should be a priority in Physical Therapy treatments concerning the senior population. There are many ways to incorporate balance exercises into an exercise regiment. Some types can include **dynamic balance** activities, which are exercises performed under the aim of moving the body outside its base of support, or the act of maintaining postural control moving. These exercises can be performed in a seated or standing position, determined by the difficulty that is desired or by the type of balance the Therapist wishes to challenge. Such exercises can be lighthearted and fun to keep the engagement of a confused patient, depending on the cognitive status, or just to keep the exercises interesting in a general sense. **Pilates, Tai Chi, and Yoga** are wonderful assets to the Physical Therapist for the senior patient for many reasons, as they can help with improving flexibility, strength, and balance. Tai Chi is repetitive and easy to learn and follow, with slow deliberate movements that are low impact, and controlled breathing techniques that can be calming. Tai Chi is also chair friendly, which is important for seniors with limited strength and endurance. Pilates can heighten body awareness and help to prevent falls. Like Tai Chi, Pilates includes elements of posture, balance, breathing, and core strength. This attention to increased stability and coordination is important for seniors in that it can help improve functional movement, including balance while standing and walking. Yoga also enhances balance, flexibility, mobility, and strength. It has been shown to reduce stress, improve sleeping, and alleviate aches and pains. Yoga is also slow and repetitive, while including elements of breathing techniques and improving core stability.
- Flexibility exercises stretch the muscles, limbs, and joints and help the body stay limber. Flexibility is important to maintain joint mobility, good posture, and mobility. If a senior cannot move all their joints, they tend to become immobile and inactive, resulting in a general decline. As aforementioned, Yoga, Pilates, and Tai Chi are good types of exercise to promote joint flexibility.

Older adults with chronic conditions should be educated on whether and how their conditions affect their ability to exercise. Seniors should be encouraged to monitor their vitals, or have them monitored by a caregiver. It is important to include exercises that are considerate of the patient's limitations. For example, a patient with a severe heart condition or breathing issues cannot be expected to run for any

extended length of time, nor can someone with cognitive decline be expected to remember complicated exercises and perform a program without assistance. Balance and gait difficulties are also to be taken into consideration. A person with decreased balance and difficulties performing gait should be monitored closely with any type of standing or balance activities to avoid falls and injury.

Assistive devices are important to maintain independence and safety for seniors, and should be implemented as needed. There are many types of assistive devices available for the senior, and for Physical Therapy purposes, the most important types are those used for mobility purposes. Assistive devices can help patients with lower extremity weakness or poor balance by improving safe mobility. These devices can include walkers, canes, crutches, wheelchairs, and the like. Please peruse the following types of assistive devices that can be utilized in patient mobility;

- Wheelchairs are of course the base of the mobility assistance pyramid, so to speak. They are vital for someone who is unable to walk, or unable to walk for more than a severely limited distance. There are many types of wheelchairs. There are ultralight wheelchairs, or transport chairs, that often weigh less than ten pounds. These are not as heavy-duty as the others but are good for transporting the patient to doctor's visits as they are ideal for travel and can easily be folded and lifted by caregivers. Heavy-duty wheelchairs are ideal for larger elderly patients. They are designed to accommodate taller and wider adults who need mobility assistance. Because of this feature, they tend to be heavier and more difficult to transport, especially for a caregiver who is compromised in strength. Manual wheelchairs can include regular or heavy-duty chairs, and need to either be pushed or rolled by the patient using the wheels. These are ideal for extremely independent users and for those under the constant care of a caregiver. The independent user can be encouraged to pedal using their feet, and maintain the strength of their arms by pushing the wheels themselves. Electric wheelchairs, while heavy and often need to be transported by van, are great for elderly people with limited upper and lower body mobility who require more independence. They are good for getting around the house or around the shops.
- Walkers are for those who require more stability. There are standard walkers, rolling walkers with two wheels, three-wheeled walkers, and four-wheeled walkers. Standard walkers have no wheels and are good for those who need the most support and need to bear a significant amount of weight on the walker. Two-wheeled walkers are ideal for those who continue to require a lot of support, but who lack the strength and balance required to lift and move a standard walker. Three-wheeled and four-wheeled walkers allow for improved mobility, and usually include a seat for those who are more mobile to be able to take a rest. While three wheeled walkers are flexible, they are not as stable as those with four wheels and the patient is unable to bear as much weight upon them. The four-wheeled walkers are

not as stable as two-wheeled or standard walkers as leaning too heavily upon the wheeled walker will cause issues with control. The walker may move too quickly, resulting in falls.

- Canes are useful to assist in balance, widen the base of support, or to decrease weight-bearing and pressure through one of the lower extremities that is injured or suffering from a disease such as arthritis. Less stable than walkers, they are not advisable for someone who requires maximum balance assistance, but they are easier to transport and improve patient mobility. They are better suited for those who are more active and who have the ability to be able to safely maneuver them. There are many types of canes, including straight canes, quad canes, and tripod canes. Straight canes are the most common type of cane, and are great for patients who require a bit of needed stability or unburdening of one side of the body. Quad canes are the most stable, but many patients find it difficult to maneuver due to the bulky legs and increased weight. Tripod canes are also stable, although less so than quad canes. They are easier to maneuver than quad canes due to decreased size and weight, and may reduce the fall risk associated with risk of foot collision when stepping.
- Crutches can be beneficial for seniors who need to use their arms for weight-bearing and propulsion and not just for balance. The patient requires strength and good coordination for proper use, and are very unlikely to be suitable for the elderly. That being said, there are three types of crutches. The standard axillary, or underarm, crutch, the forearm crutch, also known as lofstrand, elbow, or the Canadian crutch, and the gutter crutch, which is composed of padded forearm support. None of these are very stable for the elderly and should be used with care and at Therapist discretion.

Exercise can also have a positive effect on morbidity and mortality rates. In the United States in 2017, the death rate was highest among those aged 85 and over, with about 14,689.2 men and 12,966.5 women per 100,000 of the population passing away. For all ages, the death rate was at 897.2 per 100,000 of the population for males, and 831.4 per 100,000 of the population for women (“Death Rate by Age and Sex in the U.S.”, 2017). The top three leading causes of death are heart disease, cancer, and accidents. Amongst the elderly, the top three causes of death are heart disease, cancer, and chronic lower respiratory disease. Falls are the leading cause of injury-related death amongst persons aged more than 65 years. Health care providers such as Physical Therapists can address this high rate by assessing gait and balance, reviewing mind and body altering medications, and asking questions to determine safety issues that are present in the patient’s home life and social life.

Section 1: Summary

Aging has several detrimental effects on the body. There are numerous physiological changes to the heart, mind, respiratory system, bones, tendons, ligaments, joints, musculoskeletal system, and auditory and visual systems. Strength, balance, flexibility, mobility, and joint range of motion suffer a decline as age progresses. In addition to physical alterations, the cognitive status of elderly people undergoes a significant change. It is easy to retain learned behaviors that have been repeated over and over, however it is not so easy to learn new things on account of the decreased neuroplasticity of the brain. Special consideration should be paid to seniors who are having difficulty with memory-related issues, and caregivers should be involved in the process to ensure compliance and ease of carryover at home. The use of assistive devices should be considered to improve the balance and safety of the patient and should be specifically prescribed to each patient with their needs in mind. Exercise should be an integral part of a senior's routine to help avoid mental and physical decline and keep the patient as mobile as they can be for as long as they are able.

Section 1: Key Concepts

- **Aerobic** - also known as cardio, this is physical exercise of low to high intensity that depends primarily on the aerobic energy-generating process. Aerobic exercise increases respiratory and heart rates.
- **Amyloid Plaques** - Misfolded proteins that form in the spaces between nerve cells. They first develop in the areas of the brain concerned with memory and other cognitive issues.
- **Anabolic Hormones** - hormones that build up metabolism.
- **Apoptosis** - a form of programmed cell death, which occurs as a normal part of cellular life.
- **Assistive device** - Any device that is designed, made, or adapted to assist a person to perform a particular task
- **Atherosclerosis** - a disease of the arteries characterized by the deposits of plaques of fatty materials on the inner walls.
- **Bradycardia** - slow heart rate, fewer than 60 beats per minute.
- **Catabolic-destructive metabolism** - the breaking down in living organisms of more complex substances into simpler ones with the release of energy.
- **Cognitive aging** - the decline in cognitive processing that occurs as people get older. Age-related impairments in reasoning, memory, and thinking speed can arise during adulthood and progress as the senior ages.

- **Collagen** - a protein that provides structure too much of the body, including bones, tendons, ligaments, and skin. Collagen plays a role in strengthening skin and benefits elasticity and hydration.
- **Crystallized intelligence** - the accumulation of knowledge, facts, and skills that are acquired throughout life. These tend to remain stable or even improve with age due to the repetitive, familiar nature of these tasks or abilities.
- **Dementia** - a collective term used to describe various symptoms of cognitive decline, such as forgetfulness. Dementia is a symptom of several underlying diseases and brain disorders. While not a single disease in itself, it is a general term used to describe symptoms of impairment in memory, communication, and thinking.
- **Dynamic activities** - the ability to move the body outside its base of support or the act of maintaining postural control while moving.
- **Executive Function** - a set of mental skills that include working memory, flexible thinking, and self-control. Difficulty with executive function can make it hard to focus, follow directions, and handle emotions.
- **Fluid Intelligence** - the capacity to think logically and solve problems in novel situations, independent of life acquired knowledge. Fluid intelligence involves the ability to identify patterns and relationships that underlie novel issues and to discern these findings using logical reasoning.
- **Hyaluronic Acid** - a sugar found naturally in the body such as in the skin, that holds water and helps to keep us hydrated. Also found in joints, to hold water for lubrication and proper joint function.
- **Hypertension** - also known as high blood pressure, can lead to severe health complications and increase the risk of heart disease, stroke, and death.
- **Hypotension** - low blood pressure, less than 90/60.
- **Mild Cognitive Impairment (MCI)** - the stage between the expected cognitive decline of normal aging and the more serious decline of dementia. This stage can involve problems with memory, language, thinking, and judgment that are greater than normal age-related changes.
- **Morbidity** - the condition of being diseased, or the rate of disease in a population.
- **Mortality** - death, especially on a large scale, such as the number of deaths due to a particular cause.
- **Pilates** - a system of exercises using special apparatus, designed to improve physical strength, flexibility, and posture, and enhance mental awareness.

- **Presbycusis** - the most common type of age-related hearing loss, caused by the natural aging of the auditory system. It occurs gradually and initially affects the ability to hear higher-pitched sounds.
- **Processing Speed** - the speed with which cognitive activities are performed, as well as the speed of motor responses.
- **Tachycardia** - a heart condition that makes someone's heartbeat more than 100 times per minute
- **Tai Chi** - an ancient Chinese discipline of meditative movements practiced as a system of exercises.
- **Tau Tangles** - also known as neurofibrillary tangles, Tau tangles are twisted protein fibers that form inside nerve cells. They are a marker of Alzheimer's disease and have been found in numerous other sufferers of dementia diseases.
- **Yoga** - a type of exercise in which you move your body into various positions in order to become more fit or flexible, to improve your breathing, and to relax your mind.

Section 2: Alternative Considerations for Senior Care

Frailty is characterized by a reduction in physical reserve amongst older adults, distinguished by increased vulnerability and decreased function. This weakness places seniors at risk for falls, injury, hospitalization, institutionalization, functional decline, and death. Frailty can be reversible, which would result in a significant improvement in elderly health. It is important to address frailty amongst the other age-related conditions in relation to keeping with the Triple Aim principles. The Triple Aim includes three goals;

- Improving the individual experience of care
- Improving the health of populations
- Reducing the per capita costs of care for populations

The Triple Aim was coined by the Institute for Healthcare Improvement (IHI), which is a non-profit charitable organization with a mission to improve public health and health care worldwide. In this view, **telehealth** visits should be a consideration. New trends emerge every year, and it is important to stay on top of these trends to stay abreast of the ever-changing situation. Telehealth visits have become more prevalent in society over the years, and have skyrocketed with the introduction of the 2019 Coronavirus (COVID-19). In pandemics such as this, it can be important for people to stay at home and self-isolate which makes it more difficult for medical practitioners

of all disciplines to attend to the healthcare needs of their patients. While telehealth can be an important addition to the therapeutic community, there are some considerations and limitations concerning the senior community and telehealth that need to be addressed.

Telehealth programs can be a wonderful implementation for older adults in rural areas in order to decrease hospitalizations and increase access to care for older adults with complex healthcare needs who are largely isolated. It can also be a way to include caregivers in conversations and therapeutic planning, as they may be unable to participate due to time constraints and it is vital to include caregivers and family in the experience of planning and carrying out a plan of care. Telehealth can be beneficial for a younger population as well, to monitor exercises and progression, and provide education. Some patients prefer videoconferencing in telehealth sessions to in-person contact due to convenience, reduced travel requirements, and improved care coordination.

On the other hand, there are some downsides to telehealth with elderly populations. Take the following points into consideration;

- Older adults and their caregivers may have some reservations about telehealth as it is a relatively new technology. For example, participants may be concerned about the privacy and security of their health information. Education should be performed about the security of the connections to abate these fears. Privacy and security risks should be identified and addressed to continue to further the telehealth technology.
- Seniors may not be completely secure in their technological abilities. Technology advances quickly, and as we have discussed it is difficult for people who age to learn new things due to the decreased plasticity of the neural cells in the brain. Without a caregiver or helper who is technologically savvy, elderly individuals can experience difficulty navigating websites or telehealth platforms. Quite a few seniors profess to have difficulty and experience confusion concerning internet usage.
- Lack of access to internet services could be an issue. More than a third of people over the age of 75 do not use the internet. Quite a few seniors do not have access to internet services due to not feeling a need to have the service. They feel that they can arrange everything they need to via telephone and paper.
- Some computer illiterate seniors say that they cannot access the internet due to poor vision or decreased hand-eye coordination. Physical limitations can prevent the elderly from reaching their potential with technological advances.
- Physical safety can be an issue for the elderly performing gait and exercise at home. A lot of seniors are weak and unsteady. It is unwise for a patient who could

experience a fall, dangerous injury from overexertion, or physical fluctuations such as heart rate, blood pressure, or breathing difficulties, to exercise without close supervision. These types of patients, who are experiencing frailty and health changes, may need someone close by for contact to avoid a fall or to supervise them to avoid adverse reactions to exercise and gait. They may also require more extensive, in-person education to ensure that they are doing well and learning to exercise and function properly.

In regard to these reservations for telehealth services, it is important for practitioners to offer alternative solutions such as continued availability of regular, traditional visits. It is highly doubtful that all medical services are going to be terminated any time soon, or terminated completely in general. With the recent rise in telehealth services, education should be performed to help seniors acclimate and limitations should be realized and dealt with on a case by case basis.

A predominant issue to be examined is the inclusion of the family or caregivers of the patient. The presence of family or other support systems can be of great psychological benefit to the patient. Patients need support that is not solely of the physical element. Some common psychological ailments that can affect seniors include anxiety, depression, substance abuse, personality disorders, delirium, and dementia. Psychological issues may arise from grief, loss of autonomy, fear, loneliness, and lack of social networking. These issues can have a detrimental impact on physical health. The stress of these disorders can increase the risk for cardiovascular disease, cause increased psychological disorders, promote eating disorders, result in hypersomnia or insomnia, further memory loss, and advance social isolation issues. Support from loved ones is vital to the mental and physical health of the senior patient. Elders with a strong social network tend to live longer, have a stronger immune system, and improved mental health.

In addition to psychological concerns, it is important to include the family or loved ones in the care program of the senior adult for physical reasons. Caregivers can help patients in other ways such as;

- Encouraging patients to attend appointments is a great way to remain involved. Attending them with the senior adult is a way to stay up to date in care plans and support the patient emotionally. The caregiver can provide assistance in car transfers and gait if necessary to lessen the risk of falls, depending on the level of physical independence of the patient.
- Caregivers can help the patient complete exercises. They can provide a motivational force and also help those with memory issues to remember what it is they have been told to do. It is important to perform the exercises or activities as prescribed by the Physical Therapist to ensure proper, timely progression, and best results.

- Loved ones can help to track the patient's progress. They should keep a record of the patient's abilities, noting progression in not only exercise, gait, and balance, but in the ability to perform daily activities and skills that are necessary.
- Caregivers can observe the patient to discern if there are any problems that arise from Physical Therapy. New exercises can cause undue pain, soreness, or injury. These observations should be noted and discussed with the Physical Therapist to provide the proper feedback required to adjust the plan of care and reduce any issues that occur.
- Family members can provide support and contact care during more challenging balance exercises and for those with issues with gait. Caregivers should be provided with a gait belt for support and safety, and education for the use of this assistive device.
- Companions can provide assistance in helping to relieve the burden of the senior's activities. This can be done by helping to focus on assisting with activities of daily life such as bathing, grooming, dressing, toileting, and mobility. They can help with things such as driving, housework, lawn care, and other things that the senior finds difficult to maintain.

It is important to stress to the caregiver that they should remember to take care of themselves also. Many family members tend to overwork themselves out of duty, love, necessity, or the lack of access to receive help. Enforce that the caregiver takes time to handle their own responsibilities and to take breaks from the responsibilities and stress that come with caregiving. Refer the caregiver to organizations that can help relieve some of their burdens as well, as a caregiver who is overstressed and overworked cannot provide adequate care for someone else if they do not care for themselves as well. Home Health services may be helpful or suggesting the hiring of someone to assist with the day-to-day activities that they are unable to do. Part-time or full-time help may be needed. Keep in mind that the caregiver may be financially distressed, which may be complicated by the need to help the seniors with their expenses. Research programs and resources in the local area to help those who are low income or financially extended. Assistance can be reached in the way of federal programs such as Medicare or Medicaid, housing assistance, food resources, and many others. The conscientious Physical Therapist should be familiar with local city and county resources, state programs, federal programs, local non-profit organizations, and faith-based organizations to provide a comprehensive resource network for the struggling patient and caregiver.

Another subject for contemplation is the pharmacological effects on the patient. Medications are prescribed as an important intervention to help treat and prevent illness, disability, death, pain, and multiple other medical issues. Most elderly patients are affected by **polypharmacy**, which occurs when a patient takes too many

medications for their own good. This is common amongst seniors and patients with multiple medical problems. The combined effects of numerous medications can have adverse effects on their health. Older patients metabolize drugs differently, and these combined effects can be especially harmful. Taking too many medications can lead to dangerous drug interactions and increased exposure to many side effects at once. This applies not only to prescription drugs, but also to over the counter medications and supplements such as dietary supplements or vitamins. Many patients often use these over the counter medications as needed without feeling the need to consult a physician or inform them of their usage.

A case study performed in Sweden including a total of 49,609 cases were included, matched with an equal number of controls, to determine whether the use of multiple drugs increases the risk of fall-related injury amongst older adults. The number of prescription drug usage was higher amongst the non-control group.

Alcohol use while on medication is also a factor that can cause issues in the elderly. In the United States alone, approximately 40-50% of older adults drink alcohol, and more than 90% of older adults take medications. This is the most commonly used substance amongst older adults according to the National Institute of Health. Alcohol can have problematic interactions with medication use. Alcohol can also exacerbate common medical conditions in older adults, including stroke, high blood pressure, memory issues, mood disorders, diabetes, and osteoporosis. Older adults are more susceptible to the adverse effects of alcohol and medications because of changes in the body that affects the distribution and metabolism of these substances and increases the brain's sensitivity to the medications' effects. Alcohol can interact with the body when taking medications by raising blood alcohol levels, interfering with the effectiveness of medications, altering the metabolism of drugs, and can compound side effects. Some interactions between alcohol and medications occur primarily on those who tend to drink heavily, with more than three drinks per occasion, but many interactions may occur with lower amounts of alcohol use. The older population needs to be educated on the potential risk of combined alcohol and medication use.

Since seniors often take multiple medications, side effects can be detrimental to their everyday life. **Opiates** for pain relief are commonly prescribed, as they can play a critical role in treating the common debilitating pain that may leave a senior immobilized and homebound. Prescribing opioids can help an elderly person to maintain their independence and improve their general quality of life. That being said, there are several ways that pain medication can impact the life of a senior negatively. Some side effects of opioids include;

- **Constipation** - can cause negative mood effects and abdominal pain, resulting in difficulty performing activities of daily living.

- **Confusion** - confusion can be difficult for patients who may already be suffering from cognitive decline. Opiates can increase the already present confusion, compounding the issues that a senior may be suffering from. Therapists should monitor and assess the patient for any sudden change in cognition.
- **Sedation/drowsiness** - Sleep quality generally declines in the elderly, so anything that causes an increase in sedation should be monitored. Sedation and drowsiness may increase the risk of falls, and will decrease motivation to participate in the exercise.
- **Addiction and dependence** - Patients who use prescription opioids over an extended period of time may become dependent on these drugs. It is very easy to become addicted to pain medication. Addiction occurs when a person has a compulsive urge to use the medication when not medically necessary, and suffers from withdrawal symptoms when they do not take the medication. Opiates initiate the release of **dopamine** in the brain, which creates pleasurable feelings and reinforces the desire to continue taking the drug.
- **Nausea** - Nausea and vomiting can leave the patient incapacitated and unable to function.
- **Slowed breathing/respiratory depression** - This can lead to **hypoxia**, which can cause short and long term psychological and neurological effects, including coma, permanent brain damage, and death. Vital signs should be monitored and recorded to ensure that they are within normal functional limits.

There is a high prevalence of **benzodiazepine** use amongst the elderly population. They are useful to treat a wide range of disorders such as anxiety, seizures, and insomnia. Benzodiazepines can be useful in helping seniors to be less stressed, and sleep better. Despite the usefulness, there are various side effects associated with benzodiazepine use. These can include;

- **Somnolence** - extreme sleepiness or unusual desire to sleep. Somnolence can result in reduced function and increased risk of falls.
- **Dizziness** - Dizziness can cause loss of balance and result in falls and injury. Dizziness is especially dangerous for seniors who are active, as they tend to try to continue their daily activities and “push through” and dizziness they experience.
- **Trembling** - Usually not a dangerous condition, but can worsen over time. Tremors can cause issues with transfers and mobility.
- **Impaired coordination** - Impaired coordination results in increased difficulty with mobility, and increased risk of falls. Difficulty walking, transferring, and performing activities of daily living are common in those with impaired coordination.

- **Vision problems** - difficulty being able to see is dangerous due to the fact that someone who cannot see well will be less able to identify environmental concerns, such as trip hazards, which means that the likelihood of falls increases.
- **Confusion** - As discussed above, confusion in the elderly is common and dangerous if exacerbated by other medications.
- **Depression** - Depression is also a common ailment in those who are older. Depression can become overwhelming and reduce motivation to leave the home, exercise, or even to get out of bed.
- **Headaches** - Headaches can cause visual disturbances, dizziness, nausea, and reduce motivation in sufferers.

Benzodiazepines and opiates are the major contributors to side effects in the elderly, but other common medications can cause the above symptoms and more. The elderly are also prone to misuse or abuse of medications because they use more prescription or over the counter medications than other age groups. They are at high risk for medication misuse due to pain, confusion, depression, sleep disorders such as insomnia, and anxiety. Seniors are more likely to receive prescriptions for medications that have a high potential for abuse, such as opioids and benzodiazepines. It is estimated that approximately one in four older adults use a prescription medication that has the potential for misuse or abuse. The elderly are also more likely to use these psychoactive medications for longer periods than younger adults, which increases the risk of misuse and abuse. The elderly are at a greater risk for **adverse drug reactions** (ADR's) because of the metabolic changes and reduced drug clearance associated with aging. This risk is exacerbated by the number of drugs used.

Section 2: Summary

Telehealth is an emerging technology that can be useful both to the patient and the practitioner. This technology can be utilized to decrease hospitalizations and increase access to care for older adults with complex healthcare needs who are largely isolated. Telehealth can also be important in the changing times as insurance reimbursement lessens. Although Physical Therapy is largely a hands-on practice, there is plenty of value a Therapist can provide from a distance due to the monitoring of patients and the ability to discuss changes in plans of care via technology. Caregivers should be encouraged to get and remain involved in the senior's care. In addition to cooperation, they should be provided resources to assist with the reduction of burnout and stress that commonly accompanies the stresses of providing care and taking over responsibility for someone who was previously independent. A strong consideration for the elderly is the use of medications, either over the counter or prescribed, and their side effects. The aging person's body responds more strongly

to medication, and the use of multiple drugs can have unintended consequences. Changes in metabolism and body composition as someone ages affects how the medication works. The use of alcohol, which is common in seniors, can interact poorly with most medications and be dangerous to the patient. Common side effects of medications in older adults can be weight loss or gain, falls, confusion, insomnia or somnolence, as well as many others. Patients who take multiple medications should be monitored for behavioral or physical changes.

Section 2: Key Concepts

- **Adverse drug reactions** - an injury caused by taking medication. Adverse drug reactions may occur following a single dose or prolonged administration of a drug or result from a combination of two or more drugs.
- **Benzodiazepines** - a type of medication known as tranquilizers, used to assist in the treatment of anxiety, sleep disorders, and seizures, amongst others. Some of the most commonly prescribed medications in the United States. Have a high potential for abuse.
- **Dopamine** - a neurotransmitter chemical that is responsible for transmitting signals between nerve cells in the brain. Dopamine is a “feel good” chemical and plays a large role in how someone feels pleasure.
- **Frailty** - the condition of being weak and delicate. Frailty is a common side effect of aging.
- **Hypoxia** - a condition in which the body or a region of the body is deprived of adequate oxygen supply at the tissue level.
- **Opiates** - Sometimes known as narcotics. They are highly addictive due to the body’s production of dopamine when taken. Used to treat pain disorders.
- **Polypharmacy** - the simultaneous use of multiple drugs by a single patient, for one or more conditions.
- **Somnolence** - sleepiness or drowsiness. Somnolence is a strong desire for sleep, or sleeping for unusually long periods.
- **Telehealth** - the provision of healthcare remotely by means of telecommunications technology.

Section 3: How to Create an Effective Plan of Care for Seniors

Seniors are often prescribed Physical Therapy to help improve functional mobility following accidents, illness, functional decline, or surgical procedures. Physical Therapy can be beneficial for patients with chronic conditions such as Parkinson's disease, chronic obstructive pulmonary disease (COPD), multiple sclerosis (MS), and Alzheimer's disease (AD). Being able to implement an effective, safe plan of care for each individual senior can significantly improve the results of therapy interventions.

Physical therapy can be used to help elderly patients with a variety of diseases and medical conditions, including;

- **Arthritis** - to treat pain and swelling, reduce joint pain and stiffness, strengthen joints that have been weakened by damage and inflammation, improve range of motion, and improve mobility.
- **Stroke** - for stroke patients, Therapists use **constraint-induced movement therapy**. This is a treatment where the patient is forced to use the weaker arm, limb, hand, or leg to work instead of using the strong area of the body. Motor imagery and mental practices are utilized to rehearse movements without actually doing them, which stimulates the part of the brain that controls movement.
- **Parkinson's disease** - Therapy can be useful in those with Parkinson's disease to improve trunk flexibility and avoid the robotic movements the disease produces. Parkinson's disease is notable for dystonia, which is a movement disorder in which a person's muscles contract uncontrollably. This contraction causes the affected body parts to twist involuntarily, resulting in repetitive movements or abnormal postures. Dystonia can affect the muscle, a muscle group, or the entire body. Freezing is a common issue with Parkinson's sufferers. This is marked by the temporary, involuntary inability to move. Not all who suffer from Parkinson's disease experience freezing episodes, but those who do have a great risk of falling. Some triggers associated with freezing can include turning in tight spaces, walking through doorways, walking in narrow hallways or crowded places, or changing walking surfaces such as carpet to hardwood (King, 2019). A Therapist can be useful in identifying triggers and symptoms and guiding a patient through an exercise program that can reduce freezing episodes. Gait is one of the most affected motor characteristics of this disorder, although the symptoms are varied. Parkinsonian gait is characterized by small shuffling steps and a general slowness of movement (hypokinesia) or even the total loss of movement (akinesia) in extreme cases. A Therapist can be beneficial in helping the patient to correct these abnormalities through exercise, cues, and at times assistive devices. One assistive device available for those with Parkinson's disease is a type of walker with a laser attached that projects a bright red laser on the ground, which helps users who suffer from

freezing episodes to extend their stride and maintain a steady gait. An audible beeping pattern can be activated for additional gait assistance.

- **Multiple Sclerosis** - Multiple Sclerosis (MS) is an unpredictable disease of the central nervous system that disrupts the flow of information within the brain and between the brain and body. Therapy for Multiple Sclerosis includes exercises to strengthen muscles, improve gait, and improve balance and coordination. It also involves stretches to maintain mobility and prevent muscle spasms. Therapy can also include training on assistive devices such as canes, walkers, and wheelchairs.
- **Incontinence** - Patients are taught how to find the right muscles and use them correctly through the use of pelvic exercises and occasionally electrical stimulation modalities. This can reduce the risk of accidents, keep patient's skin intact and dry, and reduce infections and other issues. In addition, this can improve mood and self-confidence and promote mobility as the patient may not be as nervous about going out.
- **Chronic obstructive pulmonary disease (COPD)** - COPD is a common disease in the elderly. It is estimated to affect 14.2% of patients over 65. This can be addressed by physical therapy by improving shortness of breath by training muscles and increasing aerobic capacity.

Physical Therapists go through a comprehensive process to determine the ideal physical therapy regimen for any patient, beginning with a thorough evaluation concerning their specific needs. A successful treatment program should be based on more than just a beginning diagnosis, as people can have the same diagnosis but varied physical issues. The treatment plan should be personalized specifically to each patient to help address their challenges. The primary goal of Physical Therapy with senior adults is to help them remain as active as possible as they age and begin to decline. A major goal of treatment is usually to improve or maintain the ability to do daily tasks and activities.

In evaluating a senior, there are many considerations to keep in mind. The evaluation portion of the Physical Therapy process should consist of;

- **Physical Examination** - An examination refers to the physical therapist's evaluation of strength, flexibility, gait quality, transferability, body mechanics, balance, coordination, posture, and vital signs such as blood pressure, heart, and respiration rate. The examination may involve hands-on activities, such as probing muscles and joints.
- **Gathering of history** - The Physical Therapist should ask questions regarding health and diagnoses, and the specific condition for which the patient has sought therapy services.

- **Performance of tests and measures** - Tests and measures are used to determine the ability of the patient on many levels. Patients may be tested for balance issues, gait quality, loss of strength, range of motion (ROM) deficits, transfer issues, coordination deficits, and postural abnormalities.
- **Diagnosis** - A diagnosis in Physical Therapy is the result of a process of clinical reasoning which results in the identification of existing or potential impairments, limitations in daily activities, and restrictions in participation in daily life. The Physical Therapist uses data gathered during testing, obtainment of medical history, and the physical examination to determine what types of limitations exist for the patient.
- **Prognosis** - A prognosis is reached by examining the combination of medical history, examination, test results, and diagnosis. This is the determination by the Physical Therapist of the predicted optimal level of improvement in function and the amount of time needed to reach that level.

The Physical Therapist's evaluation is an ongoing process that begins at the first session with the patient. Elements of treatment may change throughout the care process based on additional information gathered from the patient, changes to the condition of the patient, and the patient's response to care.

After an evaluation, a **plan of care** should be established. The written plan of care should contain, at a minimum;

- The correct date for the plan of care being sent for certification, such as the initial evaluation date, and subsequent dates for treatment.
- The diagnosis. This should be included to show a reason for treatment.
- Short and long term treatment goals. Short term goals can include something along the lines of improving gait distance to 30 feet with moderate postural sway and moderate contact assistance, while long term goals could include improving gait distance to 150 feet with minimal postural sway and stand by assist. The Therapist should discuss goals that are realistic with the patient, keeping in mind that what is a realistic goal for some may not be realistic for others. The Therapist should discuss what the patient hopes to accomplish with Physical Therapy as well, as patient goals may be different or more specific. A patient's main goal may simply be to walk far enough to get to a vehicle and transfer safely in and out of the seat, to reach church services or visit family. These patient goals should be considered and worked towards as well as therapy goals. Therapists should keep in mind that their documentation should be thorough. The goals should be achievable for the patient, given the patient's condition. They should be relevant to the functional issues and describe why they are important. Every goal and the subsequent documentation should describe the functional problem and how fixing the issue will improve

patient independence, avoid surgery and hospitalization, or other expensive debilitating declines. They should be concise and to the point. If a detail is not important to the plan of care, it should be left out for ease of navigation.

- The type, amount, duration, and frequency of therapy services. This should be specified in each treatment note. This could be represented by writing something such as, the patient is to receive Physical Therapy for 6 weeks, twice a week.
- Signature, date, and professional identity of the therapist who established the plan of care and the Therapist who provided the treatments.
- Dated physician signature indicating agreement with the plan of care and any desired changes made to the plan of care as it progresses.

These elements should all be included to ensure proper insurance reimbursement and reduce the liability of the Physical Therapist and facility. After a plan of care is established, treatment will begin. A well organized, descriptive but concise plan of care and good documentation is like a helpful road map. It informs the clinician and other readers when they are on course, when course corrections need to be made, and informs others involved in the patient's case such as the referring physician, insurance auditor, and the patient. The plan of care should be shared with the patient and reviewed with them routinely. It can be useful as an educational tool, a source of motivation for the patient, and can be utilized to establish medical necessity and demonstrate the value of Physical Therapy services.

The **SMART tool** should be considered when writing goals for the plan of care. This can be broken down as follows;

- Specific goals should target a specific area for improvement. Instead of using a broad goal such as, the patient should improve gait distance in 6 visits, say something along the lines of the patient should improve gait distance from 20 feet with an assistive device to 80 feet with an assistive device within 6 visits to better mobility and strength. The 5 W's can be used to ensure goals are specific. They are;
 - What is therapy trying to accomplish?
 - Why? List the reasons, purpose, and benefits of therapy.
 - Who is involved? What members of the care team are involved in this plan?
 - Where will this take place? A hospital, home care center, outpatient facility?
 - When will this goal take place? How long will it take to reasonably accomplish this goal?

- Measurable goals form concrete criteria for tracking progress. Objectives need specific times, amounts, and dates for completion so that the patient and Therapist can measure their progress.
- Attainable goals are necessary for the proper progression of the patient. Patient limitations should be considered when creating goals. The goals should be within reach of the patient. It is unrealistic to expect a patient who has been wheelchair-bound for years to be able to be a completely independent community ambulator, for example. The patient should have the skills, ability, and resources to reach a goal, and it should be well documented on how to achieve the goal. All obstacles to the goal should also be considered and documented, as well as ways to counteract the obstacles if possible.
- Relevant and realistic goals should answer the following points;
 - Is it worthwhile and important to the patient?
 - Is this the right time to consider this goal, or should other goals be reached first?
 - Does this match other efforts and needs, or does it conflict those goals?
 - Is Physical Therapy the right discipline? Should Occupational Therapy or other disciplines be involved in the patient's care?
 - Goals should be flexible and set the patient and Therapist up for success.
- Time-bound goals and objectives must have a deadline. Goals may be considered short term or long term, while objectives need specific dates to meet. Goals need a starting point and endpoint, which is why a deadline is beneficial. Deadlines can be used for motivational purposes, to keep the patient on track and determined to reach a set point by a certain time. These goals should be measured in terms of visits, weeks, or even months.

A well-written plan of care, daily progress notes, progress reports, and other written communication will help to deliver the best of care. There are four main parts to a good Physical Therapy daily note. The basic outline of a therapy daily note should follow the **SOAP** format. The SOAP format includes Subjective, Objective, Assessment, and Plan elements. Examples of these can include the following;

- Subjective elements include what the patient says about the problem and interventions. This can include pain, reports of functional ability, changes in patient ability, and issues the patient has. An example could be, "Today the patient reports increased swelling in her left knee. She attributes this to the increased stretch time to improve her extension and flexion. The patient continues to be hesitant to use her cane instead of her walker. She reports pain of 5/10 currently, reaching heights

of 7/10.” The subjective statement should include any insights you have from the patient regarding their general health, progress, and obstacles.

- Objective statements should include factual information. It should outline the objective results, the progress towards functional goals, and treatments performed. It should include details of the interventions, including frequency, duration, and therapy equipment used. Any changes in status should be noted, as well as communication with colleagues, family, or caregivers. Any therapeutic exercise, manual therapy, and neuromuscular re-education may be included in the objective section. “The patient performed wall squats x 20, standing heel to toe raises x 20, bilateral standing hip extension x 20, ankle pumps x 20, straight leg raises in supine x 20, knee flexion active-assisted x 20 in long sitting, and 15 minutes on a stationary bike at a comfortable pace and level 3 difficulty. The patient performed gait x 200 feet with a quad cane and stand by assist (SBA) of Physical Therapist. The patient required moderate cues for sequencing with cane, safety, hand placement on a cane, to look up instead of at floor, and to improve step height, knee flexion, and step length.” Measurements taken should also be included, such as, “Left knee range of motion (ROM) measures 100 degrees flexion, with -10 degrees extension.”
- The assessment portion of the note is potentially the most important area because this is the Therapist’s professional opinion in light of the review of the subjective and objective findings. It is important that this section be used to highlight why the therapy skill continues to be required. It should explain the reasoning behind the decisions taken and clarify and support the analytical thinking behind the problem-solving process. Progress towards the stated goals are indicated, as well as any factors affecting it that may require modification of the frequency, duration, or intervention itself. Adverse responses to therapy should be documented, as well as positive responses. Vague assessments should be avoided, such as simple statements like “The patient is improving,” without providing data to prove such. For example, in keeping with previous examples, this should examine the subjective and objective portions of the note and follow up on them with an assessment of the results and how the patient is experiencing declines or progression. “The patient continues to experience deficits in flexion and extension range of motion. Range of motion exercises to continue. The patient is tolerating strengthening exercises well. Gait distance is improving, although the patient continues to require moderate cues for quad cane usage, including sequencing and safety. The patient continues to require cues for step height, length, and increased knee flexion, however at a moderate level instead of maximal level as compared to previous sessions.”
- The plan is the final portion of the note. This is used to outline the plan for future sessions. The Therapist should report on what the patient’s **home exercise program** (HEP) will consist of, as well as the steps needed to take in order to reach the functional goals. Changes to intervention strategies should be documented in this

section. “The patient will continue with the home exercise plan strengthening exercises, adding five repetitions to each to continue to facilitate strength. The patient will be provided with an updated home exercise program. The range of motion exercises duration and frequency will continue with an increase in stretch time of 15 minutes per flexion and extension, to be outlined in the home exercise program. The patient should focus on practicing gait with a quad cane, and be mindful of step height, length, and knee flexion, as well as quad cane placement, safety, and sequencing, at least three times per day. Physical therapy will continue 3 times a week for 4 more weeks.”

The treatment sessions should consist of obtaining the necessary information, performing the exercises and interventions, and conducting ongoing assessments of patient progress or decline. The plan of care should be updated as necessary, and documented upon completion of every therapeutic session.

The first goal of a Physical Therapy plan for the elderly is to reduce pain and swelling if there is any. Then, a Therapist will apply various techniques to increase flexibility, strength, coordination, and balance. Some types of therapies, or **modalities**, that can be included are;

- Manual therapy - therapy performed by the hands of the therapist with the goal of relaxing the patient, reducing pain, decreasing edema, relieving spasms, and providing more flexibility. It can include;
 - Massaging the muscles and soft tissue to relax the patient, improve circulation, and relieve pain.
 - Mobilization of the body, using slow movements to pull or twist joints and bones into a proper place. This can help to loosen tight joint tissues and increase flexibility.
 - Manipulation uses fast, forceful movements to relieve pain and realign joints and bones.
- Cold therapy can be used to relieve pain, swelling, and inflammation from conditions including arthritis or post-surgical illness. Treatment can include ice packs (15-20 minute sessions), ice massage, and rest, ice, compression, and elevation (RICE). Ice can be used to decrease swelling and pain post-exercise.
- Heat therapy relaxes muscles and improves blood circulation, which is useful for loosening stiff joints from osteoarthritis or other immobilizing conditions. Heat can also be used to loosen muscles before exercise.
- Hydrotherapy is the use of water for many ailments. It can be performed in a pool or body of water and is designed to help relieve joint pain. Hydrotherapy is often selected by a physical therapist due to the fact that water buoyancy takes the

pressure off of the joints while at the same time providing resistance for strengthening.

- Electrical stimulation (E-stim) is the use of electrical current to create a desired effect in the body. This can be used to block pain signals and assist with pain relief. Electrical stimulation can be used to contract muscles in stroke victims, or patients who are post-surgical intervention. E-stim is often used in conjunction with cold laser therapy to promote better healing. It is provided usually by the applications of nodes to the skin on certain trigger points.
- Ultrasound therapy uses high-pitched sound waves to reduce muscle spasms and relax the muscles before or after exercise. It can be used to reduce pain. Ultrasound is provided via hands-on treatment with a handheld wand.

A plan of care for the elderly should not only take into consideration the medical and physical needs, but also nutritional, emotional, and psychological needs, and the quality of life of the patient. Other disciplines should be considered and consulted as needed to ensure a well-rounded approach. A patient should be referred to Speech Therapy for those with memory or swallowing disorders, and Occupational Therapy for those with difficulty with the finer motor muscles of the hands or issues with dressing, bathing, and self-care, amongst other problems. Psychiatric referrals should be made for patients suffering from depression, anxiety, and other mental decline. A Therapist cannot neglect the whole body approach, as although the major goal is to help physically, other disciplines may be appropriate in conjunction with Physical Therapy, as well as psychiatric care for those who require such interventions.

Section 3: Summary

Physical Therapy intervention can be useful in the treatment of many diseases or illnesses in the elderly. A well-designed plan of care follows an evaluation, and includes points such as diagnoses, goals, and descriptions of how to reach those goals. The plan includes daily treatment notes, progress updates, utilizes the SMART tool to ensure that goals are specific, measurable, attainable, relevant, and time-bound. All the elements described should be included to document the proper treatments, reasons for treatments, progress of the patient, updates to care, and can be useful in motivating the patient. A successful treatment session should consist of obtaining the necessary information, performing the exercises and interventions, and conducting ongoing assessments of patient progress or decline. The plan of care should be updated as necessary, and documented upon completion of every therapeutic session. The Therapist should utilize the SOAP method of documentation, or Subjective, Objective, Assessment, and Plan portions, to ensure proper thorough recordings of patient issues, progression, treatments, possible declines, and to outline the plan for the patient going forward. As well as focussing on the Physical Therapy aspect, the

Therapist should keep in mind the possibility of the requirement of involving other disciplines, including Speech Therapy, Occupational Therapy, and psychiatric care. Therapists need to focus on the elderly patient by taking a whole-body approach to provide comprehensive care.

Section 3: Key Concepts

- **Akinesia** - loss or impairment of the power of voluntary movement.
- **Chronic obstructive pulmonary disease** - a chronic inflammatory lung disease that causes obstructed airflow from the lungs. Caused by long term exposure to lung irritants such as smoking, air pollution, chemical fumes, or specks of dust.
- **Constraint-induced movement therapy (CMT)** - a specialized approach used to increase the use of a limb affected or weakened as a result of a stroke or brain injury. The forced use of the weaker limb or area of the body instead of the stronger limb or area.
- **Diagnosis** - identification of the nature of an illness or other problem, by examination of the symptoms.
- **Dystonia** - a movement disorder of a muscle, muscle group, or the entire body that results in a person's muscles contracting uncontrollably. The contractions cause the affected body part to twist involuntarily, resulting in repetitive movements or abnormal postures.
- **Home Exercise Program** - a series of exercises that patients complete at home to maintain strength and increase therapeutic gains. Designed to continue a patient's recovery process outside the physical therapy office, by encouraging patients to participate in specific exercises.
- **Hypokinesia** - diminished power of movement, also known as hypomobility.
- **Modalities** - various methods of electrical, thermal, or mechanical energy treatments. Includes electrical stimulation, ultrasound, heat, ice therapy, and traction.
- **Multiple Sclerosis** - an unpredictable diseases of the central nervous system that disrupts the flow of information within the brain, and between the brain and body.
- **Plan of care** - a carefully prepared outline of care showing all the patient's needs and ways of meeting those needs. This is a dynamic document initiated upon evaluation and subject to continuous reassessment and change by the practitioner.
- **Prognosis** - the determination by the physical therapist of the predicted optimal level of improvement in function and the amount of time needed to reach that level.

- **SMART tool** - a tool used to ascertain that goals are specific, measurable, attainable, relevant, and time-bound.
- **SOAP** - the outline of a therapy daily note, including Subjective, Objective, Assessment, and Plan.

Summary

During the aging process, it is expected for patients to begin to progressively weaken and experience cognitive decline. Exercises to improve stamina, endurance, flexibility, strength, and balance are important to assist the senior in maintaining their mobility and independence. Special consideration should be paid to seniors who have difficulty with memory issues, and any caregiver should be involved in the entire therapy process. The Therapist should also remind the caregiver to care for themselves, as they cannot properly care for their charge if they are worn out themselves. Emerging technology such as Telehealth should be considered to reach patients who are otherwise isolated, as this can be useful to discuss changes in the plan of care and monitor patients from afar. It can also be useful if there is an engaged caregiver who is able to perform activities under the supervision of a Therapist.

Polypharmacy should be a consideration and heavily monitored in the patient as the body metabolizes medications differently as the patient ages, and multiple medications can have a negative effect on the patient. In this vein, patients should be cautioned not to use alcohol with medications as the use of alcohol can interact poorly with most medications and cause undesired effects, such as exacerbation of the intended effects and increased risk of falls and confusion. Patients who take multiple medications should be monitored for behavioral or other physical changes.

A well-designed plan of care should be implemented by the Therapist that includes an evaluation, diagnoses, goals, and descriptions of how to reach these goals. The Smart Tool can be utilized to ensure that goals are specific, measurable, attainable, relevant, and time-bound. A daily progress note is recommended to follow the SOAP model, with sections to describe subjective data, objective data, assessments, and plans for further care. The plan of care should be updated as necessary and documented well. The inclusion of other disciplines should be considered to provide a well-rounded approach to the overall well-being of the patient.

Physical Therapy for the senior patient should consider the patient's needs and personal goals, and motivate them to reach these goals while providing education and support along the way. Therapy can be a valuable tool to rehabilitate after injury, illness, or surgery, or to improve upon the patient's lives following the eventual expected decline. Therapy is useful in assisting to restore and improve functionality,

reduce pain, and increase mobility, strength, and safety, which are all aspects that make up the overall quality of life for the senior.

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