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If have not already done so, please visit [WellnessSociety.ORG](http://WellnessSociety.ORG) to establish your **Wellness Society** account to access the **TEXTBOOK SUPPLEMENT**.

The **TEXTBOOK SUPPLEMENT** provides the supplementary materials (e.g., videos, links to webpages, pdfs, references, etc.) referred to in this textbook, as well as bonus materials.

## 4 CHAPTER 1: WELLNESS AND PHYSICAL THERAPY

### THE PROVISION OF WELLNESS EDUCATION BY PHYSICAL THERAPISTS

Historically, physical therapists have engaged and educated patients in structured physical exercise, an important component of **physical activity** wellness (Busse et al, 2017; Lein et al, 2017; Malmo 2020). More recently, physical therapists have started to teach **body composition** wellness (Allison et al, 2019; Dean et al, 2019; Rea et al, 2004) and **smoking cessation** (Lein et al, 2017; Pignatar et al, 2015; Rea et al, 2004; Thind et al, 2016). While physical therapists are increasingly providing education to enhance **nutrition** wellness (Fair, 2004; Malmo, 2020; Rea et al, 2004), there are nutrition interventions that are clearly outside of our purview. For example, while we may provide basic nutritional education to a patient with a diagnosis of non-insulin diabetes mellitus (NIDDM), we would be more cautious with a patient with insulin dependent diabetes mellitus (IDDM) and refer her to her primary care physician (PCP) - or communicate with her PCP and refer her to a registered dietician (RD). We continue to provide **holistic physical therapy** when we take into account the IDDM diagnosis and instruct the patient to take her

blood sugar level before each visit, just as we measure pain and blood pressure each visit (APTA, 2005). After all, we would not want our patient to engage in exercise if her blood glucose level is already too low and cause her to go into a diabetic shock! Physical therapists are also branching into the **mental** and **social** components of wellness (Fair, 2004). For example, Lotzke (2019) found that compared to conventional preoperative care, a person-centered prehabilitation program based on cognitive-behavioral physical therapy was linked to a more substantial improvement in physical activity intensity, the One Leg Stand Test, and the number of steps per day at the six-month follow-up of lumbar fusion surgery. Patients also ask questions of and expect answers from physical therapists regarding a variety of health-related topics (Black et al, 2016; Rea et al, 2004). For example, 91.3% of patients agree their physical therapist should speak to them about physical activity, 73.0% about healthy weight, 51.3% about smoking, and 32.1% about fruit and vegetable consumption (Black et al, 2016)

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### THE USE OF CASE SCENARIOS IN STUDENT PHYSICAL THERAPIST EDUCATION



As student physical therapists in a classroom setting learn about the provision of physical therapy, they practice on each other – they conduct a test, provide a treatment, etc. The ability to transfer their acquired knowledge to a real patient must also be practiced to be learned

because it requires not only **cognitive** and **psychomotor** competence, but also **affective** (or “feeling”) competence. Because it is not very often practical to have people with medical conditions commonly treated by physical therapists visit the classroom and serve as ‘mock patients,’ case scenarios are an important teaching / learning strategy to promote student physical therapist affective competence. In fact, research has concluded that using case scenarios in the physical therapy classroom is *critical* in the preparation of student physical therapists to become competent entry-level physical therapists (e.g., Adame-Walker et al, 2020; Greenwood et al, 2017). Case scenarios invite and indeed require student physical therapists to consider and demonstrate the affective components of the provision of physical therapy,

tural competence, professional behavior, professional development, and safety (Adame-Walker et al, 2020). Compassion and caring are also important (Catalino et al, 2015). Of these core abilities, the ability to effectively communicate is the most important (Greenwood et al, 2017). In fact, **communication** – which includes interpersonal, verbal, written, and electronic modes of interaction (ATPA, 2005d) – is the “foundation of entry-level practice” (Adame-Walker et al, 2020, p7).

Because it is imperative to be able to competently communicate with their patients (and their caregivers, colleagues, etc.), the student physical therapist ought to endeavor to master basic communication skills. According to the APTA (2005m, p18), the *minimum* communication skills (including conflict management and negotiation skills) of a student physical therapist graduate are:

1. Develop a rapport with patients/clients and others.
2. Display sensitivity to the needs of others.
3. Actively listen to others.
4. Engender confidence of others.
5. Ask questions in a manner that elicits needed responses.
6. Modify communication to meet the needs of the audience.
7. Demonstrate congruence between verbal and non-verbal messages.
8. Use appropriate grammar, syntax, spelling, and punctuation in written communication.
9. Use appropriate, and where available, standard terminology and abbreviations.
10. Maintain professional relationship with all persons.
11. Adapt communication in ways that recognize and respect the knowledge and experiences of colleagues and others.
12. Recognize potential for conflict.
13. Implement strategies to prevent and/or resolve conflict.
14. Seek resources to resolve conflict when necessary.

### Case 1-1.1. Hilda



You are an outpatient physical therapist starting your first session with patient Hilda, who sustained a left tibia fracture secondary to an accidental fall. Bearing in the mind the communication skills listed by the APTA, partner with a classmate and interact with your mock patient to illustrate how you would learn the details of Hilda’s fall.

### Case 1-1.2. James



You are a physical therapist working in acute care and are starting your first visit with patient James, who is 24-hours status post a right total knee arthroplasty. James is having difficulty removing the cold pack from his knee region, so you teach and assist him in doffing it. Bearing in the mind the communication skills listed by the APTA, partner with a classmate and interact with your mock patient James to illustrate how you would examine his pain, and began to instruct him in pain management. (We will continue our visit with James in Case 2-3.5. James, on page 38.)

**PRINCIPLE 4. PATIENT SELF-REPORT**

The fourth (4<sup>th</sup>) principle of the Model of Holistic Physical Therapy (MHPT) recognizes that to screen and examine wellness (i.e., health-related behaviors over time), you do not ‘directly’ obtain information (such as when you measure blood pressure or range of motion); rather, you obtain information from patient self-report.

**Patient self-report** is conveyed either deliberately or unknowingly and consists of a patient’s **verbal and written answers** to your questions, **unsolicited statements**, and **face-to-face behaviors** and **body language**. Each of these are straight forward, but just to confirm, unsolicited statements are those verbalizations made by a patient that are not made in response to a question you have posed. That is, the patient just says (or writes) something. It is your task to determine if the unsolicited statement is pertinent to physical therapy or not. An example of a patient answering your question and body language is a patient stating “yes” with a scowl on her face when you ask her if she smokes. An example of a face-to-face

behavior and an unsolicited statement is a patient suddenly starting to cry exclaiming her cat died last night.

It is critical to recognize and appreciate that the examination of wellness (i.e., health related behaviors over time) and obtaining patient self-report is an **ongoing and iterative process** – much like the larger process of providing holistic physical therapy. (Patient self-report and the iterative process of examination are discussed in detail in ‘Chapter 3: Holistic Physical Therapy Patient Management.’)

**PRINCIPLE 5. ELEMENTS AND EVEN COMPONENTS OF WELLNESS ARE NOT EQUALLY IMPORTANT TO EACH PERSON**

The fifth (5<sup>th</sup>) principle of the Model of Holistic Physical Therapy (MHPT) highlights the fact that **elements** and even **components of wellness** are not equally important for each patient. **Physical wellness example:** Regular self-measurement of blood pressure might be very important to a person with hypertension, but not at all important to a young adult in excellent health. *Photo Quiz:* How would you correct the patient’s wife if you were teaching her how to measure his blood pressure? **Social wellness example:** Participating in social activities and maintaining close personal relationship is more important in the ‘average’ person than it is for a lifelong ‘loner,’ who is quite satisfied with his

lifestyle. **Mental wellness example:** Near daily participation in a paid-occupation is often important to people in their mid- to late-teens through people in their mid-60s, but is often less if at all important to a person in their 70s or beyond.



**PRINCIPLE 6. COMPONENTS OF WELLNESS AFFECT EACH OTHER AND THE ABILITY TO ENGAGE IN AND BENEFIT FROM PHYSICAL THERAPY**

The sixth (6<sup>th</sup>) principle of the Model of Holistic Physical Therapy (MHPT) is: The components of wellness affect each other and affect the ability to engage in and benefit from physical therapy. To provide holistic physical therapy, you must not examine only your patient’s ‘physical therapy problem,’ but you must also examine or screen pertinent aspects of his physical, mental, and social wellness. Additionally, you should not provide only interventions to address your patient’s ‘physical therapy problem,’ you should also provide interventions to improve those behaviors that adversely affect her progress in physical therapy, if not also enhance her quality of life. Examine examples one through five.

1. If your patient is not getting adequate sleep, she might begin to cancel physical therapy sessions.



2. If your patient is not consuming adequate protein and calories, it is contraindicated to have her engage in strength training.



3. If your elderly home health patient continues to smoke two packs of cigarettes a day, it might significantly affect his ability to progress in physical therapy.



4. If a patient in your outpatient clinic presents ‘feeling down,’ she will not be able to mentally engage in physical therapy unless you are able to address her emotional state.



5. Unfortunately, if your patient is leading a lifestyle that is riddled with low-level wellness, he might not be able to benefit from physical therapy no matter what you do!





## SECTION 1: PHYSICAL THERAPIST PATIENT MANAGEMENT

*... the most crucial step toward healing is having the right diagnosis.  
If the disease is precisely identified, a good resolution is far more likely...*  
Andrew Weil, MD (1942-)

### APTA's PHYSICAL THERAPIST PATIENT MANAGEMENT MODEL

In 1995, the American Physical Therapy Association (APTA) published a Position Statement to endorse the “**Physical Therapist Patient/Client Management Model**,” which consists of six components: examination (including the history, systems review, and tests and measures), evaluation, diagnosis, prognosis (including plan of care), intervention, and outcome. See **Figure 3-1.1. APTA’s Physical Therapist Patient/Client Management Model**. The APTA continues to endorse this model.

Physical therapists can use the model to describe and quantify a patient’s need for services, determine whether consultation with or **referral** to another discipline is indicated, conclude if the patient will benefit from physical therapy, and, if so, develop the physical therapy plan of care (APTA, 2015g). It is critical to understand the physical therapist’s management of a patient should be an **ongoing and iterative process** (APTA, 2015g). Thus, at any point during an episode, the physical therapist might consult with, co-manage with, or refer the patient to another practitioner. The physical therapist develops the physical therapy **plan of care** and is accountable for it – whether that means there is only one physical therapy visit or retention of the patient for additional visits. Optionally, the physical therapist may utilize the assistance of, direct, and supervisor a physical therapist assistant and/or aid. Refer to **Figure 3-1.2. Physical Therapist Decision Making**. The APTA’s (2011) *Today’s Physical Therapist: A Comprehensive Review of a 21<sup>st</sup> Century Health Care Professional* provides rich detail of APTA’s Physical Therapist Patient/Client Management Model, which we will now review. Integrated into our discussion

will be additional information related to wellness and holistic physical therapy.

**Figure 3-1.1. APTA’s Physical Therapist Patient/Client Management Model**



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## ELICITING PATIENT SELF-REPORT

Although eliciting pertinent **patient self-report**, especially from a classmate or another mock patient, will come easily to some students, it will not to others. Student physical therapists, although seemingly diverse, are much more homogenous in what they understand, how they answer questions, etc. than the truly diverse patient population. Additionally, a particular student physical therapist will be able to more naturally interact with certain types patients than others types of patients due to their unique physical, social, and mental characteristics including, but not limited to cognitive status, sex (male or female); age; race and ethnicity; psychological and emotional status; caregiver involvement, diagnoses signs and symptoms of the patient disease, injury, or disorder; comorbidities; medication profile, and setting (acute vs rehab facility vs home care, etc.). Consider how you might attempt to elicit useful patient self-report from each of the

following patients: (1) A 20-year-old male in an out-patient clinic who has been referred secondary to a sports injury. He is angry because he will not be able to play for the rest of the season. (2) A middle-aged patient in a rehab facility who was in a recent motor vehicle accident (MVA). He sustained multiple fractures and is right lower extremity non-weight bearing (RLE NWB) – and he lost his wife in the accident; (3) A frail elderly female patient who was admitted to the hospital this morning after being found on her living room floor by her neighbor who delivers her mail to her. The patient lives alone, but her daughter lives locally. The admitting diagnosis was dehydration. (4) a 62-year-old female home care patient who had a right total knee arthroplasty (TKA) three days ago. She has multiple comorbidities including obesity and bipolar affective disorder. She lives with her ex-boyfriend and is on long-term disability.

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## A TOOL TO ELICIT PATIENT SELF-REPORT: HEALTH MEASURES

While it will take time and effort for a student physical therapist to hone her ability to elicit salient patient self-report, there is a tool that can be used to assist in the process. The National Institute of Health (NIH) funded the creation of **Health Measures**, a well-organized online collection of thousands of questions (aka ‘items’) that can be used to examine not only a patient’s physical status, but also his mental status and social status. Refer to and visit the **Health Measures** website, which is provided in Chapter 3 of the **Textbook Supplement** at WellnessSociety.org. The items are organized and can be searched by (1) **Age** - all ages, adult, pediatric, proxy report for pediatric; (2) **Category** - all categories, physical health, social health, mental health; (3) **Domain** – including but not limited to “ability to participate, alcohol use, anger / fear, caregiver concerns, cognition, communication, depression / sadness, engagement, fatigue, physical

activity, positive affect and well-being, psychosocial illness impact, relationships / social support, satisfaction with participation, self-efficacy, self-efficacy for managing chronic conditions, self-regulation, sexual function and satisfaction, sleep, smoking, stigma, stress, substance abuse;” (4) **Measure type** – e.g., all types, fixed length short form; (5) **Measurement System** – e.g., all systems, ASCQ-Me, Neuro-QoL, NIH Toolbox, and PROMIS; (6) **Administration Platforms** – e.g., all tools, NIH Toolbox iPad App, Paper, and PROMIS iPad App; and (7) **Language** – 85 languages including sign language. Familiarizing yourself with all of the **domains** of the **Health Measures** will reduce the risk of you side-stepping an impaired domain (e.g., self-efficacy) that, if improved, would enhance the patient’s ability to engage in and benefit from physical therapy. It is important to recognize that the **Health Measures** tool is a guide, and so although each

item can be used “as is,” it is typically more appropriate to modify them to best fit the particular patient and situation.

We will now practice using the **Health Measures** tool to examine some of the mental and social components of a patient’s chronic pain. We’ll name our mock patient Mark. To begin, visit the **Health Measures** website, which is provided in Chapter 3 of the **Textbook Supplement**. Next, select **Adult** for the Age, **All** for the Category, **Self-Efficacy for Managing Chronic Conditions** for the Domain, **All** for the Measure Type, **All** for the Measurement System, **All** for the Administration Platform, and **English** for the Language. Your search will yield 15 results related to a patient’s self-efficacy in managing chronic conditions. I will use some of the items to measure Mark’s *self-efficacy* in his ability to manage his pain and I will modify other items to measure his *actual* ability manage his pain. Of the 15 results, please select the third one, **PROMIS... Self-Efficacy for Managing Medications and Treatments**, and then, under **View Measure**, click on the form itself to download a list of items you can use to examine Mark’s self-efficacy for managing his chronic pain medica-

tions. For example, you might ask Mark, “Do you remember to take your pain medications as prescribed?” “What pain medication do you take – including the dose, and when do you take it?” “Are you following your full treatment plan – including your pain medication, your relaxation exercises, and your home exercise program?” Next, go back and click the fourth result, **PROMIS...Self-Efficacy for Managing Social Interactions**. From this list you might ask Mark, “Have you been able to stay involved with your Chess club group?” (Or, better yet, “Has your pain prevented you from meeting your friend to play chess recently?”) “When you need it, do you get any emotional support for your pain?” “How confident are you that you’re communicating well with your physician about your pain?” Or, alternatively, “How confident are you that you and I are communicating well about your pain?” The two case scenarios, **Case Scenario 3-1.4. Rachel, DPT** and **Case Scenario 3-1.5. Peter, DPT**, respectively illustrate a physical therapist who is successfully obtaining patient self-report and a physical therapist who is not. Dr. Rachel’s successful encounter is in part due to her integration of Health Measures!

### CASE SCENARIO 3-1.4. Rachel, DPT

Dr. Rachel is a home health physical therapist. Early on in her initial visit with new patient Roger Hoover, she measures his vitals. He is



afebrile, heart rate is 75 bts/min with a regular rhythm, respiration rate is 18 breaths/min and not labored, oxygen saturation is 97%, blood pressure is 157/98 mmHg on the left arm. Because the reading is elevated, she also measures it on his right arm, and the reading is 160/100 mmHg. Rachel had reviewed Roger’s chart and recalls he has a comorbidity of hypertension and has been prescribed two anti-hypertensive medications. Rachel asks Roger: “Did you take your blood pressure pills his morning?” (**Health Measures: PROMIS-Cognitive Function – Abilities Subset, item PC27r**). Roger’s reply will lead Rachel to her next question. For example, if Roger replies, “No, to be honest, I haven’t taken any,” Rachel might ask him, “Is taking your pills important

## SECTION 1: PHYSICAL THERAPIST SCOPE OF NUTRITION PRACTICE

*Let food be thy medicine and medicine be thy food*  
Hippocrates (460-370 BC)

### PHYSICAL THERAPIST SCOPE OF NUTRITION PRACTICE

Because a patient’s diet may greatly affect his or her ability to participate in and benefit from physical therapy, physical therapists should **screen** and provide credible **nutrition information** (as an intervention) to their patients. An individual physical therapist’s **scope of nutrition practice** is influenced by jurisdictional, professional, and personal scopes of practice (APTA, 2017s).

The **jurisdictional scope** of physical therapist nutrition practice is impacted by state statutes – including those related to physical therapy and by nutrition and dietetics – and thus varies state to state. Each state’s physical therapist practice act can be accessed at the website of the **Federation of the State Boards of Physical Therapy (FSBPT)**, which is provided in the **Textbook Supplement** at WellnessSociety.org. It is illegal for a non-licensed dietician to represent himself as a dietician or provide **medical nutrition therapy** - to include creating a **medical diet** - for patients with such diagnoses as Chron’s disease and non-insulin dependent diabetes mellitus (IDDM) (e.g., Dietetics and Nutrition Practice Council, 2019). The APTA’s position statement *The Role of the Physical Therapist in Diet and Nutrition HOD P06-15-22-17* speaks to the therapist **professional scope** of nutrition practice thusly: “It is within the professional scope of physical therapist practice to screen for and provide information on diet and nutritional issues to patients, clients, and the community. This includes appropriate consultation or co-management with or **referral** to a **registered dietician (RD)** when seeking the expert opinion of another provider with specialized knowledge of skills, to obtain services for a patient or client that are beyond [outside] the professional or personal scope of practice of the physical therapist” (2019n, para 2).

The physical therapist **personal scope** of nutrition practice requires physical therapists to be responsible for their education, training, and competence in providing nutritional education. For example, I earned a Master of Science in Exercise and Nutrition Science from the City University of New York, Queens College. When I graduated with my entry-level physical therapist degree from the University of Maryland at Baltimore, MD in 1993, the nutrition curriculum to which I had been exposed was not as comprehensive as are the ones today – as evidenced by the fact you have apparently been assigned to read the nutrition sections of this textbook! In other words, today’s entry-level physical therapist graduates are competent to provide basic nutrition educate to their patients without an additional degree or continuing education coursework. The nutrition information physical therapists can teach, however, must be promoted by credible organizations in the public domain, such as the **Physicians’ Committee for Responsible Medicine (PCRM)** and the United States Department of Agriculture’s (USDA’s) Tool Kit for Professionals. These websites are provided in the **Textbook Supplement**. The information presented and discussed in ‘Chapter 5: Nutrition Diets,’ is also within the physical therapist scope of nutrition practice. Physical therapists should never educate nor endorse nutrition information that is *not* evidence-based, despite how popular it might be in the lay community. Although physical therapists should not attempt to prescribe nutritional changes to treat a disease such as IDDM, they ought to monitor compliance and notify the physician of any noncompliance with diet or medication or abnormal blood sugar readings.

To optimally maintain bodily functions, the Institute of Medicine (2005) recommends **Water Intake Guidelines**: men intake 3.2 L (13.5 cups) of water per day, and women intake 2.7 L (11.4 cups) of water per day. In rare cases, men and women, respectively, require up to 3.7 L (15.6 cups) or 3.0 L (12.7 cups) of water per day, and in extreme cases even more (Benelam & Wyness, 2010). These exceptions, of course, are due to profound sweating. The guidelines for ‘water’ consumption include water provided by all foods and liquids, not just water from a bottle or faucet. Of the water we consume, about 80% is supplied by liquids and 20% by food (Benelam & Wyness, 2010). The water content of liquids and food varies considerably, for example, many fruits and some vegetables are 90-95% water, milk and juices are 85-90% water, bananas and sweet corn 80-90% water, seafood 70-80%, rice and pasta 65 to 80%, pizza 50-60% water, meat 45-65% water, cheese 40-50% water, breads 30-45% water, breakfast cereal 2-5% water, and confectionery 1-10% water (Benelam & Wyness, 2010)

Consuming too little water can result in hypotension (ICD-10-code I95.9), which causes lightheadedness and increases the risk of an accidental fall (W19). It can also lead to **dehydration** (E86.0), an early sign of which is dark colored urine. Even mild dehydration (2% loss of body weight) can cause fatigue, reduced mental and physical performance, and headaches (Benelam & Wyness, 2010). Severe dehydration can cause diarrhea, nausea, vomiting, and lead to death.

At the other extreme, a significantly high intake of fluids can lead to ‘water intoxication,’ which is when the amount of water intake exceeds the ability of the kidneys to excrete a sufficient amount. Water intoxication causes sodium levels to become dangerously low (lower than 135 mEq/L of sodium in the blood) and is known medically as **Hyponatremia** (E87.1). Hyponatremia can also be caused by profuse sweating, as during intense exercise in the heat (Benelam & Wyness, 2010).

**Application to physical therapy (PT):** For most patients, particularly geriatric patients who have a higher risk of being chronically dehydrated, it is indicated to instruct the Water Intake Guidelines. However, there are critical exceptions. For instance, if a patient has a comorbidity of systolic (congestive) heart failure (CHF) (ICD-10-code I50.33), the physician may have ordered a fluid restricted diet. Commonly, though not always, the total fluid intake is restricted to eight cups (64 oz) per 24 hours. Such a restriction is indicated because the heart is no longer able to expel fluids as it should and the excess fluid accumulates in the body. The excess fluid can be easily observed in the distal bilateral lower extremities. Sudden and excessive fluid retention in a person with CHF is a sign the heart “failing.” When treating patients who have systolic CHF, it is important to instruct them to measure their body weight about the same time each day, and report any increase of more than three lbs. in a single day or five lbs. above baseline.



### SECTION 3: STANDARD AMERICAN DIET (SAD)

*How can we hope that peace and prosperity will reign on earth  
If our bodies are living tombs in which murdered animals are buried?*  
Leo Tolstoy (1828-1910)

#### THE STANDARD AMERICAN DIET

The **Standard American Diet (SAD)** has roots in the opening of ‘**fast food restaurants**,’ such as A&W in 1919, White Castle in 1921, KFC in 1930, McDonald’s and Dairy Queen in 1940, Dunkin Donuts and In-N-out-Burger in 1948, Jack in the Box in 1951, Burger King and Sonic in 1953; and the introduction of frozen dinners by in 1953 (Oldest.org, 2021). Since post- World War II, serving sizes in America, and around the world, have been growing in size (Schlosser, 2007). For example, in the mid-1900s a serving of soda pop was 4 oz, in the 1970s was 12 oz, and by the 1990s it ballooned to 20 oz (Nielsen, 2003). Some authors and researchers have coined this enlargement of food portion and serving sizes as supersizing, and some connect this phenomenon to major chronic health issues (Hill, 1998). Many Americans seek out large food portions because they believe a good value is the largest size possible at the cheapest price, also known as supersizing. There is too often little or no consideration of the nutritional value. The combination of consumers purchasing super-sized food products and food manufacturers continually improving the efficiency of the production of those foods (via mechanization), leads to a further and further shift in our culture to consume cheap, unhealthy foods. The Standard American Diet (SAD) is associated with an increased caloric consumption. Compared to the 1970 SAD, the 2010 SAD consisted of less beef, more chicken, less whole milk and ice cream, triple the cheese, fewer vegetables, more corn-derived sweeteners; triple the cooking oil, and 26% more grain foods – primarily in the form of pastries and other baked goods (DeSilver, 2016). According to the most recent statistics avail-

able, the relative proportions of food types in the Standard American Diet (SAD) are: 9.2% fruits and vegetables; 9% high fat dairy; 23.4% grain and cereal products; 14% added sugars; 23.2% added fats and oils; and 21.2% meats, eggs, and nuts (DeSilver, 2016). Refer to **Figure 5-3.1. Standard American Diet (SAD)**. Also, refer to **Figure 5-3.2. Healthy vs Sad Gut**, a gibe at the Standard American Diet (SAD). The average adult’s SAD has significantly increased in calories, from 2020 calories in 1970 (DeSilver, 2016), to 2360 calories in 1983 (Campbell et al, 1998), and to 2480 calories in 2010 - the most recent year measured (DeSilver, 2016). Because **obesity** is increasing in the USA (ODPHP, 2020o), I would venture the average caloric intake has continued to climb.

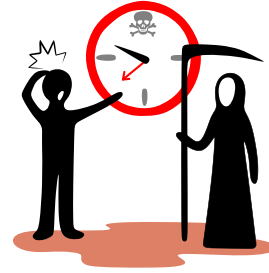
Not surprisingly, long-term adherence to the SAD diet causes **obesity** (e.g., Kopp, 2019) and increases the risk of **diabetes mellitus type 2 (DM-2)** (e.g., Heidemann et al, 2005); **gout** (e.g., Yokose et al, 2021); **hypercholesterolemia** (e.g., Carrera-Bastos et al, 2011); **hypertension (HTN)** (e.g., Carrera-Bastos et al, 2011); a variety of **cancers**, including **breast** (e.g., Addlecreutz, 2011) and **colorectal** (e.g., Tabung et al, 2017); the progression of various cancers, such as **prostate cancer** (e.g., Labbe et al, 2019; Peisch et al, 2017); and **premature death** (e.g., Afshin et al, 2019; Kopp, 2019). This cultural shift to unhealthy, low-quality foods not only negatively impacts our health, it also spurs on environmental deterioration (Walker et al, 2010). A reasonable question to ask is: Why do most Americans eat so poorly? An answer to this question is provided by Dr. Laura Schmidt in a brief **TEDMED** provided in ‘Chapter 5: Nutrition Diets, Section 3: Standard American Diet (SAD)’ in the **Textbook Supplement**.

## SECTION 5: BENEFITS OF PLANT-BASED DIETS

*Let thy food be thy medicine.*  
Hippocrates (460-371 BC)

### PLANT-BASED DIETS AND PREMATURE DEATH

Numerous studies have found compliance to a plant-based diet, even a loosely defined vegetarian diet, significantly reduces premature death (e.g., Hever & Cronise, 2017; Kim et al, 2019; Kwok et al, 2014; Tuso et al, 2013). In fact, adherence to the WFPBD causes a 32% reduction in cardiac deaths and an 18 to 20% reduction in all-cause mortality and a (Kim et al, 2019).



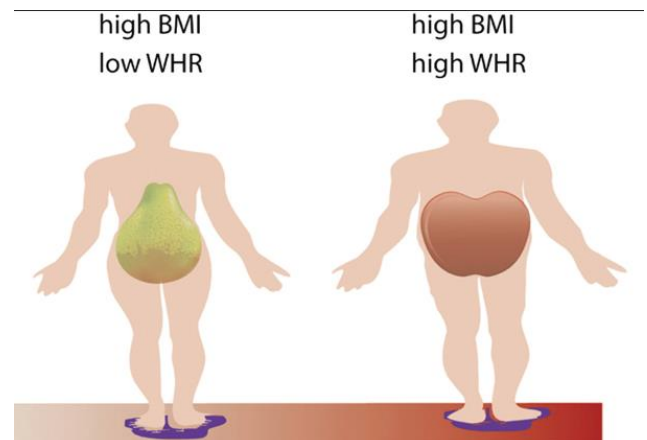
### PLANT-BASED DIETS AND OBESITY

Research using a methodology including linear and logistic regression analyses ‘proves’ there is a positive association between **meat consumption** and **obesity** (Wang & Beydoun, 2009; Salter, 2018). Meat consumption is also linked to **central obesity**, which is excess visceral fat in the abdominal region, as measured by the **waist to hip ratio (WHR)** (Wang et al, 2009). An obese person with central obesity has an android or ‘apple shape.’ Those who deposit more excess **adipose tissue** in the hip and thigh region have a gynoid ‘pear shape.’ Refer to **Figure 5-5.1. Healthy vs Obese Shapes**. Two systematic reviews concluded, that compared to vegetarians, omnivores have a higher **Body Mass Index (BMI)** (Orlich & Fraser, 2014; Dinu et al, 2017). Logically, this means obesity, not muscular hypertrophy! Further, compared to ‘any-thing except meat’ vegetarian and omnivorous diets, **obesity**, can be significantly prevented and ‘cured’ with a **vegan / whole-food, plant-based (WFPB) diet** (Le & Sabaté, 2014; Turner-McGrievy et al, 2004). But this has been known for quite some time now. In 2006, Berkow and Barnard reviewed 87 published studies and concluded the vegetarian diet is highly effective for weight loss. Their review suggested the weight loss in vegetarians is not dependent

upon exercise and occurs at a rate of approximately one pound per week. Hever and Cronise (2017) investigated the effects of a plant-based diet, determined it caused significant reductions in obesity, and recommended healthcare professionals utilize the plant-based diet as a primary modality in the prevention and treatment of obesity.

**Application to physical therapy:** In the form of a Brief Teach, a physical therapist can provide basic information to obese patients about the WFPBD and suggest they with their physicians about adopting a plant-based diet.

**Figure 5-5.1. Healthy vs Obese Shapes**

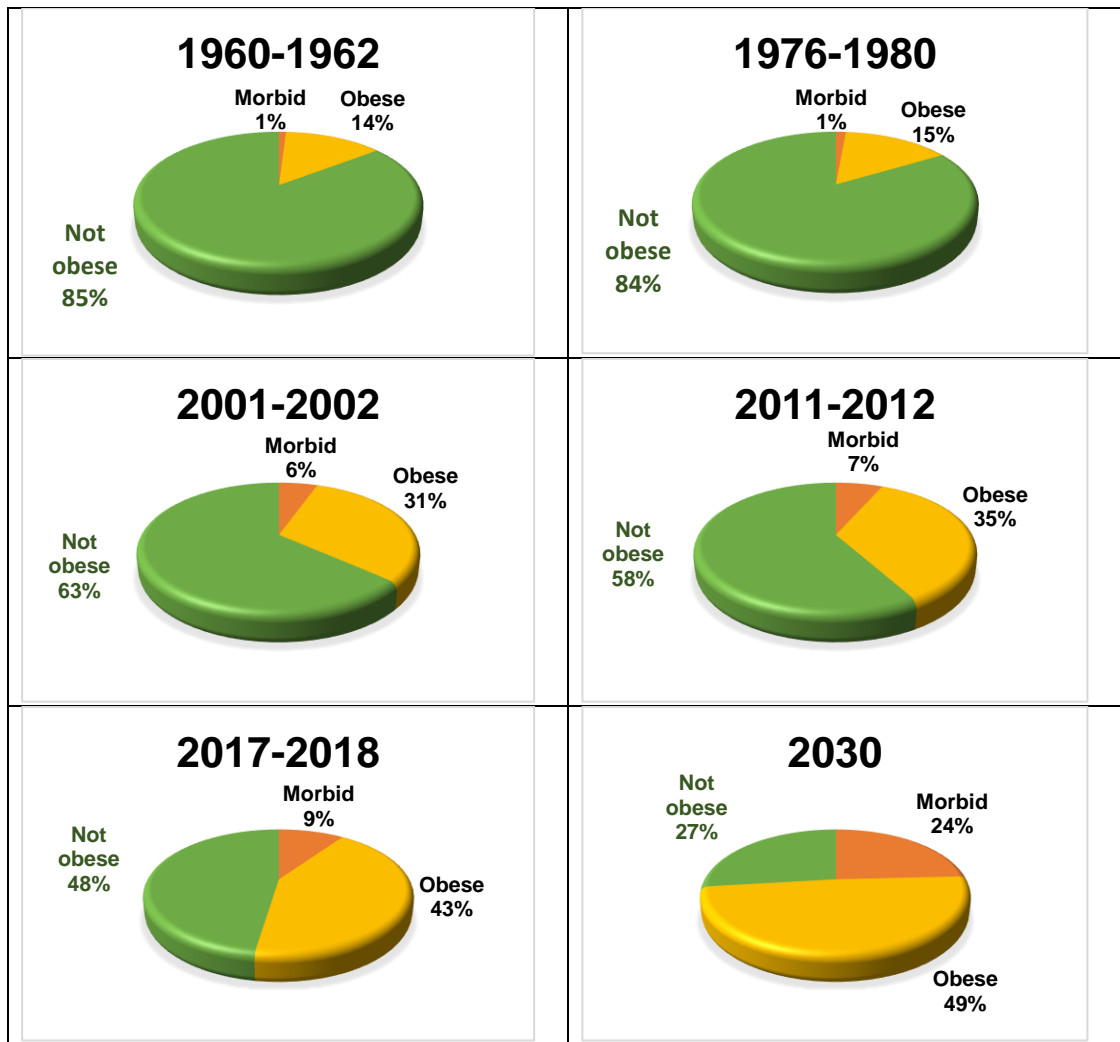


**PREVALENCE OF OBESITY**

According to the National Center for Health Statistics, the prevalence of obesity and morbid obesity has been steadily increasing since first measured in 1960. Conversely, the proportion of “not obese” people has been steadily decreasing. Some of the BMI statistics for adults age 20 and older are: 1960-1962: 0.9% morbid obese, 13.4% obese, 85.7 not obese; 1976-1980: 1.4% morbid obese, 15.0% obese, and 83.6 not obese; 2001-2002: 5.4% morbid obese, 31.2% obese, 63.4%

not obese; 2011-2012: 6.6% morbid obese, 35.3% obese, 58.1% not obese; 2017-2018: 9.6% morbid obese, 42.8% obese, 47.6 not obese (Fryar, 2021). Given the historical data and trends, it is projected by the year 2030, 24.2% of USA adults will be morbidly obese 48.9% will be obese, an only 26.9% will be not obese (Ward et al, 2019). Refer to **Figure 6-1.1. Prevalence of Obesity and Morbid Obesity in USA Adults.**

**Figure 6-1.1. Prevalence of Obesity and Morbid Obesity in USA Adults**



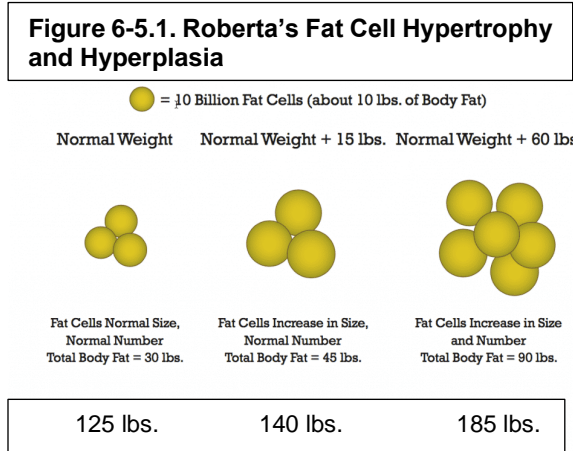
Key: Morbid = morbidly obese, Body Mass Index (BMI)  $\geq 40$ , Obese = BMI 30 to  $< 40$ , Not obese = underweight, normal weight, or overweight (but not obese) BMI  $< 30$



**FAT CELL HYPERTROPHY AND HYPERPLASIA**

When a person gains some fat weight, the adipocytes hypertrophy (increase in size). However, if a person gains a *huge* amount of fat weight, there is fat cell hypertrophy and hyperplasia (increase in fat cell number) (Jo et al, 2009). A simplified illustration is Roberta. Her baseline is 125 lbs and 24% body fat, which equates to 30 lbs fat weight. If Roberta gains 15 lbs of fat, her fat cells will hypertrophy, she will weigh 140 lbs, and she will have a total of 45 lbs of fat (which equates to ~ 32% body fat). If Roberta gains another 45 lbs, her **adipose tissue** will undergo fat cell hypertrophy *and* hyperplasia, she will weigh 185 lbs, and she will have 90 lbs of fat (which equates to ~ 49% body fat). Refer to **Figure 6-5.1. Roberta’s Fat Cell Hypertrophy and Hyperplasia**. If Rita wants to “lose weight” and adheres to a healthy

diet and exercise regime, her fat cells will reduce in size, but not in number. To decrease her number of fat cells, Roberta would have to undergo surgery (e.g., liposuction).

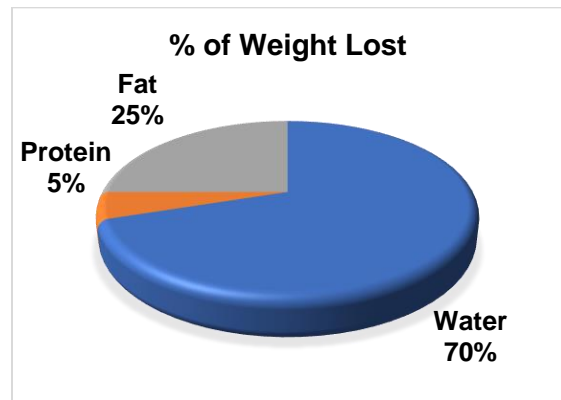


**COMPOSITION OF WEIGHT LOSS**

When a person starts a ‘weight loss’ diet, the early weight that is lost is primarily water – even if they very well hydrate. In week one of a calorie restricted diet, the composition of weight loss is 70% water, 25% fat and 5% protein; in weeks two to three, the composition of weight loss is 70% fat, 20% water and 10% protein (muscle); and starting in week 4, the composition of weight loss is 85% fat and 15% protein (McArdle et al, 2015). Refer to **Figure 6-5.2. Week 1 Weight Loss**, **Figure 6-5.3. Weeks 2 to 3 Weight Loss**, and **Figure 6-5.4. Week 4 Plus Weight Loss**. If carbohydrate intake is severely restricted then the glycogen stores compensate and this causes even greater weight loss because water is stored with glycogen in the skeletal muscles, and when the glycogen is taken the water is released. The time-specific composition of weight loss is the reason why a person starting a diet loses a relatively large amount of ‘scale’ weight during the first week and significantly less weight per week starting by week four. After the initial ‘high’ of losing a lot of weight in week one, some dieters

become frustrated and stop their new diet in less than a month. By week four on a healthy calorie-restricted diet, the ‘reference’ man will lose about two to three lbs. per week and the ‘reference’ woman will lose about one to 1.5 lbs. per week. These numbers are greater in a morbidly obese person who continues to lose large amounts of weight for up to a month or more. Why do think this is the case?

**Figure 6-5.2. Week 1 Weight Loss**



## SECTION 1: MENTAL HEALTH AND MENTAL ILLNESS

*The only journey is the journey within.*  
Rainer Marie Rilke (1875-1926)

### PHYSICAL THERAPIST SCOPE OF PRACTICE AND MENTAL ILLNESS DIAGNOSES

According to the American Physical Therapy Association (APTA), “Physical, behavioral, and **mental health** are inseparably interconnected within overall health and well-being. It is within the professional scope of the physical therapist practice to screen for and address behavioral and mental health conditions in patients, clients, and population. This includes appropriate consultation, referral, or comanagement with licensed health services providers in the prevention and management of behavioral and mental health conditions” (2020m, para2). During your career as a physical

therapist, you will provide care to innumerable patients who have at least one mental illness comorbidity and your ability to screen and address these mental health conditions will be a factor in your ability to provide competent and holistic care. If a patient’s **mental disorders** are not well managed, it will adversely affect their ability to engage in and benefit from physical therapy as well as degrade their quality of life. For these reasons, it is imperative you study mental illness and practice integrating the knowledge you gain in case scenarios. This chapter is designed to facilitate your journey.

### MENTAL ILLNESS: MILD TO MODERATE VERSUS *SERIOUS*

According to the American Psychiatric Association (APA) (2013) and the U.S. Department of Health and Human Services’ Substance Abuse and Mental Health Services Administration (SAMHSA) (2020m), a **mental illness**, or **mental disorder**, is a health condition involving changes in thinking, mood (emotion), and/or behavior that often – but not always – cause an adverse occupational or social impact, if not also a functional impairment (APA, 2013; SAMHSA, 2020m). The functional impairment, if present, can be mild, moderate, or severe. A **mild to moderate mental illness**, if not being well managed, can cause mild to moderate functional impairment (National Institute of Mental Health [NIMH], 2019). Examples of a mild to moderate mental illness are acute stress reaction (ICD-10-code F43.0), persistent depressive disorder (F34.1), grief (F43.21), and binge eating disorder (BED) (F50.81). A **serious mental illness**, if not being well managed, can cause serious functional

impairment “which substantially interferes with or limits one or more major life activities” (NIMH, 2019, para4). Examples of *serious* mental disorders are schizophrenia (F20), bipolar affective disorder (F32), major depressive disorder (F33), post-traumatic stress disorder (PTSD) (F43.1), anorexia nervosa (F50), and bulimia nervosa (F50.2). The World Health Organization (WHO) (2019) organizes diseases, disorders, and injuries by similarity of signs and symptoms. The ICD-10-code of all mental disorders begins with an “F.” There are numerous clusters within the “F” mental illness category, and each cluster consists of at least a few disorders. For examples, refer to **Figure 7-1.1. Mental Disorder Clusters**. A variety of mental illness comorbidities with which a patient might present are discussed in detail in “Section 3: Mental Disorders” (on pages 189-203).

## POST-TRAUMATIC STRESS DISORDER (PTSD)

**Post-traumatic stress disorder**, invariably referred to as **PTSD** (F43.1), is within the anxiety subcluster. The lifetime and past year prevalence of PTSD in USA adults is 6.1% and 4.7%, respectively. The prevalence is higher for younger, white or Native American, formerly married females, who did not have a high school diploma, had a lower income, and lived in a rural community (Goldstein et al, 2016). PTSD is also associated with substance use and disability (Goldstein et al, 2016). The average lapse between disorder onset to treatment is 4.5 years (Goldstein et al, 2016). PTSD stems from an acute, chronic, or delayed reaction to a traumatic event such as physical or sexual assault, military combat, or natural disaster (NIMH, 2019p). The proportion of PTSD that is delayed is

unknown, but can be higher for those who have suffered a traumatic event such as a sexual assault at a younger age (NIMH, 2019p). PTSD is characterized by intrusive, recurring images (flashbacks) and / or thoughts of the traumatic events, a state of hyperarousal, nightmares, angry outbursts, and loneliness (NIMH, 2019p). A person with PTSD might have feelings of guilt for surviving when others were killed or died. PTSD can be short duration (one to three months), but is usually long term (NIMH, 2019p). About one-half of all people experience at least one traumatic event in their life, but most do not develop PTSD (NIMH, 2019p). Why some people do and some do not is unclear. Refer to **Case 7-3.3. John**, who resembles a patient I once treated who had a comorbidity of PTSD.

### Case 7-3.3. John

John, a 67-year-old male, was referred to home health status post left below knee amputation (BKA). His comorbidities included PTSD, end-stage renal disease (ESRD) with renal dialysis, diabetes mellitus with diabetic neuropathy, among others. During the course of my examination, I learned his PTSD was secondary to trauma he suffered while serving in the Vietnam War. I screened his cognition with the Short Portable Mental Status (SPMSQ) (Pfeiffer, 1975). He scored 5 errors, which suggested a 'moderate cognitive impairment.' I asked John if he thought he had any problems with his memory and he rebuffed, "I answered these same damn questions for someone at the hospital and it's a stupid test! I have the best memory I've ever had in my lifetime!" Attempting to further discuss the SPMSQ (for instance, evidence of its validity) for the patient's cognitive deficit would have been counter-productive. However, it was indicated to notify the team, including the physician, and I do so after the physical therapy and outside of the patient's presence. The physician's nurse replied they are aware of his memory issues and his occasional

angry out-bursts. I refrained from again formally screening his cognition. I addressed his cognitive deficit by providing a significant amount of repetitive patient education, including, of course, written instructions for his home exercise program.



your patient’s self-wellness, but also her family wellness, can make the difference in you being able to facilitate her progress to achieve her maximum level of functional mobility and other physical therapy goals. To apply your knowledge of family wellness, consider **Case Scenario 8-4.2. Mrs. Deland and her Family.**

### Case Scenario 8-4.2. Mrs. Deland and her Family

You have been providing home health physical therapy to Mrs. Deland, an 85-year-old widow who lives alone. The patient was referred secondary to an accidental fall, right femoral neck fracture, and a total hip arthroplasty (postero-lateral approach). Mrs. Deland has several family members who visit often and are involved in her care: her eldest son Tom and his wife Dora (who live out of state and have been staying with the patient since her fall), and her son Benz (who lives and work within an hour’s drive of the patient). During each physical therapy session, between one and three of Mrs. Deland’s family members are also present. Prior to her accidental fall – which occurred one evening when she was taking trash to the curb for pick-up the next morning, Mrs. Deland did *not* use an assistive ambulation device. During the episode of care you have been educating the patient and, as each is present, one or more of her family members, in two long-term ambulation goals: (1) ambulate at least 300 ft with the least restrictive assistive device (LRAD) with modified independence within the home; and (2) ambulate at least 1000 ft with the LRAD with modified independence outside the home (on the driveway and sidewalk). Physical therapy interventions have also included, among others, safety education including post-surgical precautions, education in pain and edema management, strength training, balance training, instruction in a home exercise program (HEP), medication management, wound management and skin integrity, and caregiver training. You have observed the patient’s son Tom is rather ‘submissive’ to his

wife Dora, who adamantly wants Mrs. Deland to continue to use the walker she has been using since her fall so “she never falls again.” The patient’s younger son Benz, however, wants her to be able to walk again without an assistive device so she can take out her trash, etc. When questioned, the patient attempts to avoid sharing her opinion, and on occasion has responded “Benz knows best.” Your evaluations of your examinations of the patient consistently conclude she will require a cane to safely ambulate outdoors and will require a cane PRN (as needed) to safely ambulate indoors. You have asked each of the family members be present during the next home physical therapy session so you may discuss the patient’s ambulation – including PLOF, current status, and goals. Either alone or with peers, describe how this session might play out, both optimally and less successfully.



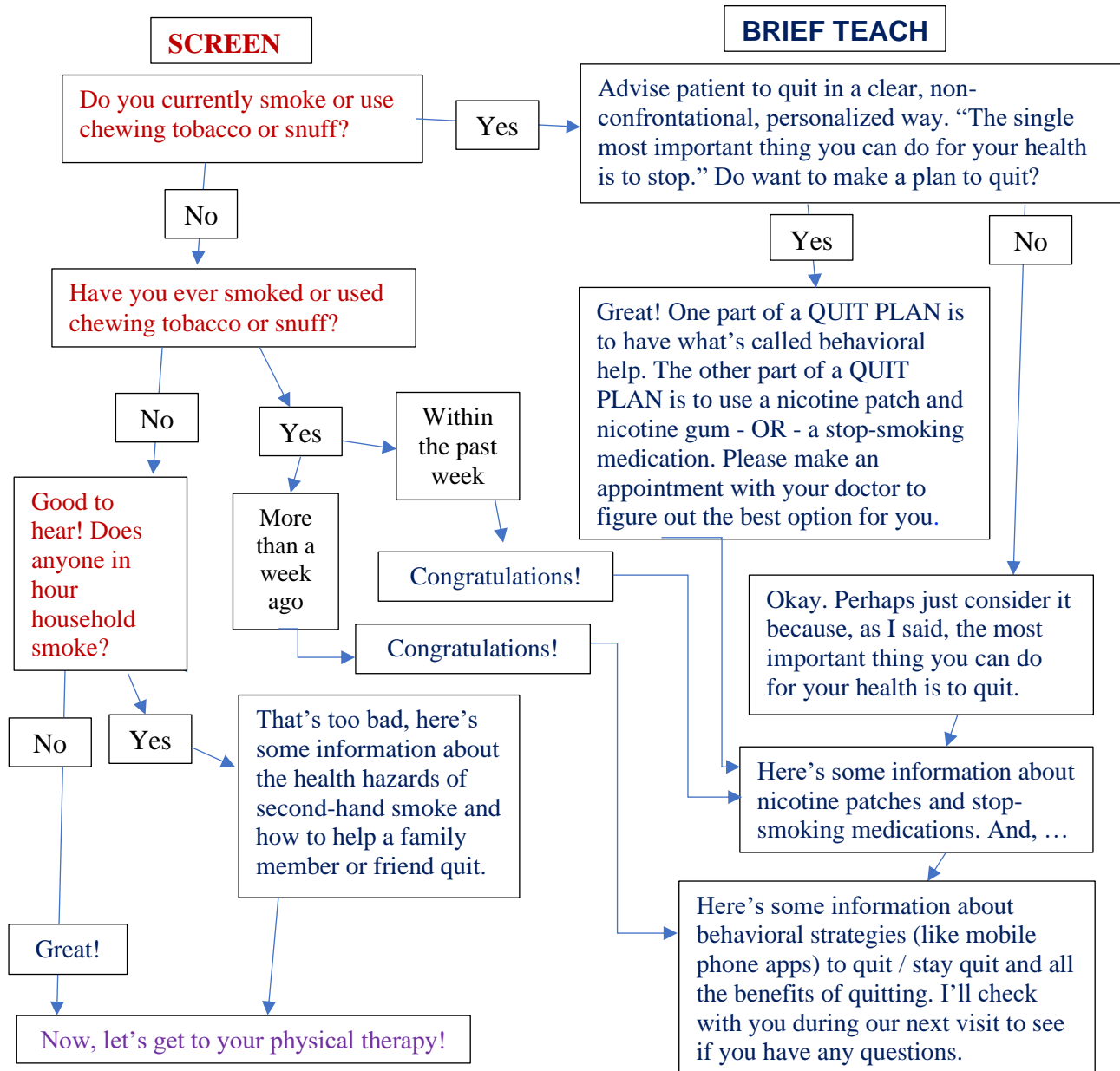
Mrs. Deland

**Figure 9-4.3. Readiness to Quit Screen**

1. I want to try to quit.
2. I want to quit because I worry about how smoking affects my health (and family).
3. I will make a QUIT PLAN.
4. I will try to cut down my level of tobacco / nicotine before quitting.

These screens are designed to capture both quantitative and qualitative data to enable the practitioner to gain a solid understanding of the patient’s unique situation and thus provide individualized care. Of course, these screens and tools can easily be modified to screen for any type of tobacco and nicotine use, including cigarettes, cigars, pipes, water pipes / hookah, smokeless tobacco, and vaping.

**Figure 9-4.4. Tobacco / Nicotine Screen and Teach Tool**



## SECTION 7: TOBACCO AND NICOTINE: CASE SCENARIOS

*Smokers don't grow old... they die young...*  
Unknown

### CASE SCENARIO 9-7.1. JEAN

You are a home health physical therapist and have been referred to a wheelchair bound patient, Jean, who has COPD and has on order for continuous 2.0 L/min of supplemental oxygen. You arrive at her house and learn she has just wheeled herself back inside from her porch, where she had smoked a cigarette. She explains that when she smokes, she simply turns off the O<sub>2</sub> generator, removes the nasal canal, and wheels herself out to the porch. You measure her oxygen saturation (O<sub>2</sub> sat) and it is 85%. What is your course of action?



### CASE SCENARIO 9-7.2. KAITLYN

You are an outpatient physical therapist. According to her chart, Kaitlyn is 70 years-old, morbidly obese, and power wheelchair dependent. One of her diagnoses is COPD and 2.0 L/min supplemental oxygen is ordered as needed (PRN). Kaitlyn is late for her appointment. When she arrives, she states, “Sorry, I’m late – I just had to stop and have a smoke.” What is your course of action?



### CASE SCENARIO 9-7.3. JOHN

You are a physical therapist employed in acute care. You arrive at John’s room for his initial physical therapy visit and he angrily states he has not been able to smoke since he was admitted two days ago! He is outraged and states, “I’m having horrible withdrawals! This is a hospital and no one is helping me! You need to help me before we do any therapy, or whatever it is you’re here for!” What is your course of action?



## HERBALS AND SUPPLEMENT INFORMATION



Due to the use of **herbals** in the treatment of cancer, the Memorial Sloan Kettering Cancer

Center maintains an evidence-based website that provides their purported uses, benefits, mechanism of action and potential interactions. Examine sponsors a scientifically based that provides objective information about a host of supplements. You can search by condition (e.g., sleep and cognitive function) or by the name of a specific supplement / intervention (e.g., melatonin or dark therapy for sleep). The **Herbal Directory** and the **Supplement Directory** are both provided in the **Textbook Supplement**. Check them out!

## DRUG TO DRUG INTERACTIONS

Data published in JAMA show at least one in 25 older adults use a medication regime posing a risk of a major potential **drug to drug interaction** – and half of these potential interactions involve the use of supplements/ herbals (Qato et al, 2008). In other words, an estimated one in 50 older adults are at risk due to supplement-drug interactions (Qato et al, 2008). While drug interactions are unlikely with the herbal black cohosh, cranberry, American ginseng, milk thistle, saw palmetto, and valerian; they are known to occur with other herbals, including curcumin, echinacea, garlic, Asian ginseng, green tea extract, and kava (Asher et al, 2017). In fact, drug interactions with St. John’s wort and goldenseal are highly likely (Asher et al, 2017). Because both the herbal ginkgo and vitamin E have an anticoagulant effect, there can be grave consequences if a patient who is already prescribed an anti-coagulant, such as aspirin or warfarin (brand name Coumadin), starts to take also take either of them (Asher et al, 2017). “Because most patients do not disclose supplement use to clinicians, the most important strategy for detecting herb-drug interactions is to develop a trusting relationship that encourages patients to discuss their dietary supplement use” (Asher et al, 2017, p101). Physical therapists should educate their patients to discuss with their respective

physician any herbal or supplement they are considering starting. Although rare, herbals and supplements – like all drugs and medication – can cause serious disease and even death. For one account of a drug interaction that resulted in acute liver failure, watch the video “Supplement Safety,” provided in Chapter 10, Section 3 of the **Textbook Supplement**.



**Application to physical therapy (PT):** You are an outpatient physical therapist and upon questioning your patient, Mrs. Callo, you learn, upon the advice of one her friends, she’s started to take the herbal ginkgo. You are aware that she is taking the medication warfarin due to her high risk of stroke. What should you say and do?

**Application to physical therapy:** If a patient presents with DM-2 and PN, provide a Brief Teach about the evidence related to supplement-

tation and advise the patient to confer with his physician to determine if he is deficient in any vitamins that might be exacerbating his PN.

## POST-SURGERY



In a randomized, double-blind, placebo-controlled trial, essential amino acid supplementation was found to mitigate muscle atrophy after total knee arthroplasty (TKA) (Dreyer et al,

2018). Specifically, twice daily ingestion of 20 grams of essential amino acids starting one week prior to and for six weeks following TKA preserved lean body mass significantly greater than placebo (Dreyer et al, 2018).

**Application to physical therapy:** Many orthopedic surgeons refer patients with knee OA to physical therapy prior to progressing to a TKA. During their course of physical therapy, the physical therapist may educate these patients in the potential benefit of amino acid supplementation prior to having a TKA and invite them to further discuss the option with their physician.

## PULMONARY DISEASES

A double-blind trial found creatine supplementation of 5.7g per day combined with pulmonary rehabilitation was associated with increased lean body weight, peripheral muscular strength, and muscular endurance in those patients with chronic obstructive pulmonary disease (COPD) (Fuld et al, 2005). However, these gains did *not* translate to an increase in functional activity, that is, there was *no* benefit in whole-body exercise capacity (e.g., incremental shuttle walking and cycle ergometry) (Fuld et al, 2005). A review involving patients with COPD and a vitamin A, C, E, or D deficiency found *no* evidence that supplementation of the respective vitamin improved pulmonary function or decreased hospitalization (Tsiligianni & van der Molen, 2010). Regarding asthma, Kaur (et al, 2013) found *no* evidence that vitamin C reduced symptoms and Thien (et al, 2000) found *no* evidence that marine fatty acids (omega 3 PUFAs) reduced symptoms. A systemic review by Whyand (et al, 2018), however, found evidence that increased vitamins A, D, and E from a whole food, plant-

based diet (WFPTD) - not from supplements - helps to protect against pollution that can trigger COPD and asthma.





### SECTION 3: ACUPRESSURE

*“The American Physical Therapy Association supports the continued use of evidence-based complementary and alternative therapeutic interventions.”*

APTA (2018c, para 1)

#### ACUPRESSURE

Unlike acupuncture, **acupressure** is within the scope of physical therapist practice. In fact, many physical therapists (notably those in outpatient clinics) integrate acupressure into their provision of care. Unlike acupuncture, acupressure is non-invasive. It can also be taught to patients for self-treatment as part of a home program. Despite the differences, acupressure mirrors acupuncture in that they are both based on the belief that **Qi** flows through the body in

**meridians** and pressure on **acupoints**. Purportedly, acupressure relieves a wide array of ailments. However, of the research that has been performed, there are often methodology weaknesses including significant risk of bias. This does mean that acupuncture is not efficacious, it means that more rigorous trials need to be done (e.g., Lee & Frazier, 2011, Song et al, 2015; Yeganeh et al, 2017).

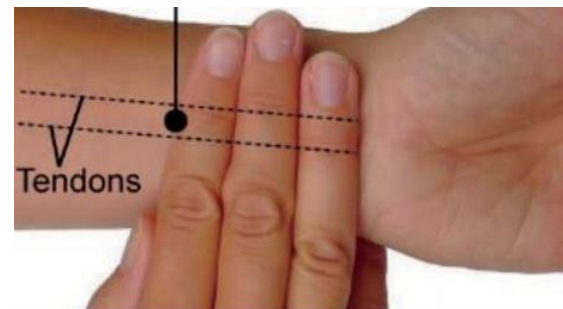
#### ACUPRESSURE FOR NAUSEA AND VOMITING

There is evidence that acupressure to P6 reduces menstruation pain (Wong et al, 2009), nausea and vomiting in early pregnancy (Adlan et al, 2017), duration of labor and cesarean rate (Makvandi et al, 2016), chemo-induced nausea and vomiting (Genc & Tana, 2015). An alternative to the human application of acupressure to P6, a Sea-bands® wrist band can be worn. Benefits are it applies constant pressure for an indefinite period of times and require little management from a patient or clinician. It has been shown to be effective to alleviate nausea and vomiting during pregnancy (Steele et al, 2001). Location of Acupoint P6 (Nei guan): forearm supinated – on the medical side of the flexor carpi radialis tendon, two cun\* (~three fingers breadth) proximal to the wrist. Refer to **Figure 11-3.1. Acupoint P6 and Sea-Bands**.

**Application to Physical Therapy:** You are an outpatient physical therapist treating a pregnant female for a shoulder injury. She had been progressing well, but recently started to cancel most of her appointments due to pregnancy-related nausea. When she does make it in to a physical therapy session, she is not able

to fully participate secondary to nausea. What do you do when she next visits?

**Figure 11-3.1. Acupoint P6 and Sea-Bands**



## EFFICACY OF CUPPING ON CERVICAL AND LUMBAR AND OTHER MUSCULOSKELETAL PAIN

### *Chronic Pain*

Since 2015, numerous systematic reviews and meta-analyses of randomized controlled trials (RCTs) on the efficacy of cupping on chronic musculoskeletal pain and range of motion (ROM) have been conducted. Summaries of six of these reviews are: (1) Yuan (et al, 2015) performed a systematic review and meta-analysis of five RCTs on the effect of a variety of traditional medicines, including cupping, on chronic cervical and lumbar pain and level of disability. Compared to no treatment, cupping produced a medium-sized, but short-term reduction in pain and disability. Compared to sham cupping or another active treatment, however, there was no significant difference. Yuan (et al, 2015) also concluded there was moderate evidence that cupping was more effective than medication (e.g., NSAIDs) for chronic lumbar pain, as measured by the visual analog scale (VAS). (2) Wang (et al, 2017) performed a systematic review and meta-analysis of six RCTs on the effect of cupping on chronic lumbar pain. The results indicated cupping was superior to no treatment in terms of the VAS and Oswestry Disability Index (ODI), but there was no statistically significant difference between the groups in terms of their McGill Present Pain Index (MPPI) scores. (3) Kim (et al, 2018) performed a systematic review and meta-analysis of 18 RCTs on the effect of cupping on acute and chronic cervical pain. Compared to a sedentary control group and an active (exercise) control group, there was low quality evidence that cupping more significantly reduced pain (as measured by the VAS) and improved function (as measured by the SF-36). (4) Moura (et al, 2018) performed a systematic review and meta-analysis of 10 quantitative design trials and 16 qualitative research design trials and concluded cupping significantly reduces chronic lumbar pain (primarily measured by the VAS a and numerical scale) and disability (as often measured by the ODI). (5) More recently, Cramer (et al, 2020) performed

a systematic review and meta-analysis of 18 RCTs and found that compared to no treatment, cupping caused large, but short-term reduction in intensity of chronic pain in all locations tested. However, they also found there was no significant difference to the benefits conferred by sham or another active treatment (Cramer et al, 2020). (6) Also more recently, Wood (et al, 2020) performed a systematic review and meta-analysis of 21 RCTs on the effect of cupping on musculoskeletal pain, ROM, and functional status. Compared to no treatment, they found low-quality evidence that cupping significantly reduces chronic cervical and lumbar pain and significantly improves ROM. They also found moderate quality evidence that cupping significantly improves functional status in those with chronic cervical pain, (Wood et al, 2020).

### *Osteoarthritis*

A systematic review and meta-analysis of seven RCTs concluded that compared to those who received only Western medicine, subjects who received Western medicine *and* cupping showed significantly greater improvements in pain and physical function, as measured with the WOMAC (Li et al, 2017).

### *Plantar fasciitis*

Although there is a limited amount of research on the efficacy of cupping on plantar fasciitis, the results are promising (Szlosek & Campbell, 2022). Ge (et al, 2017) conducted an RCT comparing the benefit of cupping versus electrical stimulation on plantar fasciitis. Each group received their respective treatment twice weekly for four weeks and four outcome measures (including the VAS) were used. The results indicated both interventions significantly and rather equally reduced pain and increased function (Ge, et al, 2017). More recently, a review of Ge's research and two other studies (that compared cupping to therapeutic exercise) concluded there is moderate quality evidence to support the use of cupping to reduce pain and improve function in patients with plantar fasciitis (Szlosek & Campbell, 2022).

An educational video series by Paul Lam, a family physician and Tai chi teacher, is offered free online. The four videos are: (1) 5-minute Tai chi to relieve stress and improve immunity (35:43 min); (2) Tai chi for osteoporosis (26.37 min); (3) three tricks to relieve stress and boost immunity (13:28 min); (4) Tai chi for arthritis

and fall prevention (2:22 min). The series is endorsed by APTA's Health and Promotion Wellness Council, the CDC, the National Council on Aging, the National Institute on Aging. The link to the series is in the **Textbook Supplement** at [WellnessSociety.org](http://WellnessSociety.org).

## EFFICACY OF QIGONG AND TAI CHI AS INTERVENTIONS

While typical forms of exercise (such as walking) can cause a reduction of the signs and symptoms of chronic diseases, Qigong and Tai chi can serve as an efficacious complement to and in some cases an alternative for them. There is extensive research that Qigong including Tai chi can be used as a primary intervention to improve balance and reduce risk of fall (Jahnke et al, 2010; Klein et al, 2019). Qigong, notably Tai chi is effective as an adjunctive treatment in the management of chronic obstructive pulmonary disease (COPD), cardiac and cardiovascular disorders such as hypertension (Jahnke et al, 2010), Parkinson's disease, cancer (Klein et al, 2019), and chronic non-specific back pain (Phattharasupharerk et al, 2019). The efficacy of Qigong and Tai chi in the treatment of Parkinson's disease is also supported by Song (et al, 2017), who found it improved balance (TUG test) and motor function (6-min walk test), depression, and QOL. There is some evidence that practice of standing Qigong produces significant health improvements in obese patients with diabetes mellitus type 2 (DM-2), including decreased in weight, height, circumference (Liu, 2011; Putiri et al, 2017), total cholesterol, triglycerides, blood glucose (Putiri et al, 2017), and improved leg strength (Liu et al, 2011). Qigong and Tai chi promote bone density and immune function (Jahnke et al, 2010). Qigong has also been found to reduce pain and depression and enhance QOL in those with osteoarthritis (OA) (Mark, 2017). Depression in the elderly is also reduced with Qigong (Chan & Tsang, 2019).

Tai chi Chuan (one of the many varieties of Tai chi) includes gentle rhythmic move-



ments, such as light knee bending, forward and backward strides, turning around while shifting the center of gravity, and maintaining the below shoulder level; and involves use of large muscle groups which, when hypertrophied, are more metabolically active and can assist in weight and fat loss and reduce the severity of knee OA – as was found during a 24-week, 24-movement intervention (Chang et al, 2016). In as early as 12-weeks, Tai chi Chuan significantly reduced BMI, triglycerides, and cholesterol in obese patients with DM-2 (Chang et al, 2016). And, in as early as eight weeks of Tai chi Chuan, patients with knee pain presented with significantly reduced pain (as measured with the WOMAC), improved balance and gait (as measured by a 12% increase in the TUG test), and an 11% increase on a stair climb test (Chang et al, 2016). The investigators suggested, however, that to continue to achieve benefit of Tai chi Chuan, the number of cycles and durations would have to be continually increased (similar to the pro-

## CASE SCENARIO 1: ROSE – HOME HEALTH



- **Location:** Oakland, California
- **PCP:** Layne Myers, M.D.
- **Insurance:** Medicare A & B
- **Demographics:** 72-yr-old, female, Asian American, married, heterosexual
- **Height:** 5'2", **weight** 132 lbs.
- **Referral:** Hospitalist physician following three days acute care 2' to pneumonia (ICD-10-CM code J18.9)
- **Diagnoses:** UTI (N39), muscular weakness (M62.81), difficulty walking (R26.2), hypertension (I10), diabetes mellitus type 2 (E11.9)
- **Undiagnosed:** hypochondriasis
- **Medications:** amlodipine 5mg, ciprofloxacin 250 mg, every 12 hrs for seven days; metformin 500 mg with breakfast and 500 mg with dinner; OTC Tylenol, 200mg, two tablets, PRN every six hours for pain
- **Occupation:** housewife
- **Other:** lives with husband Tom
- **PLOF:** mobility with modified independence (decreased cadence, used handrail on steps, etc.)
- **Diet:** SAD (Standard American Diet)
- **Exercise:** "housework"
- **"Higher Power":** Buddhist (non-practicing)
- **Cognition:** alert and oriented to person, place, time, others, and situation
- **Mood / Affect:** anxiety
- **Vitals:** temperature 99.1<sup>0</sup> F, heart rate 80 bts/min., respiration 20 br/min., blood pressure 130/70 mmHg, O<sub>2</sub> saturation 95%
- **Pain:** Visual Analog Scale (VAS): 10/10. Described as constant, dull, ache. Location: "all over"
- **Pain Management:** OTC Tylenol, 200mg, two tabs, PRN every six hours for pain
- **ROM:** WFL except bilateral ankle dorsiflexion 0 degrees
- **Muscle strength:** grossly 3+/5 to 4-/5 within available ROM (varies joint to joint)
- **Transfer (sit to/from stand):** requires standby assist (SBA) and verbal cues (VCs) for safety
- **Gait:** distance unknown, at least 50 ft. Requires forward wheel walker (FWW), contact guard (CG), and VCs for safety. Gait deviations: decreased bilateral foot /ankle subphases, forward head, bilateral abducted scapulae, among others.
- **TUG:** 32 sec.
- **Subjective:**
  - Rose: "I was sure I had COVID-19, but the hospital told me it was pneumonia. They said they tested me for COVID-19, but it was negative. I think they might be wrong. I've heard so many people have died from the virus.
  - Tom: "She measures her blood sugar 10 times a day. Don't you think that's excessive?"
  - Rose: "Well, I have to make sure my blood sugar is okay!"
  - Tom: "My wife is very anxious, isn't there something you can teach to relax her?"
- **Preferred Learning styles:** Verbal/ Auditory, Visual/Viewing, Kinesthetic/Motor Memory, Tactile/ Reaction
- **Patient's self-stated goal:** "I don't know, I'm just so nervous, I don't know. Well, maybe be as healthy as when I was 30-years-old..."
- **Preferred Learning styles:** Verbal/ Auditory, Visual/Viewing.

### CASE SCENARIO 9: KAI – OUTPATIENT CLINIC



- **Location:** New York City, New York
- **PCP:** Trish Conner, D.O.
- **Insurance:** Aetna Plus
- **Demographics:** 24-yr-old. Gender: trans-gender. Patient declines to share her race or sexual orientation. Marital status: single
- **Height:** 5'8", **weight** 146 lbs.
- **Referral:** ER physician 2' to sprain of the right ankle (ICD-10-code S93.401A) 2' skateboard accident (V00.13)
- **Diagnoses:** sprain of the right ankle (S93.401A); acute pain secondary to trauma (G89.11); difficulty walking (R26.2)
- **Undiagnosed:** suicide ideation (R45.851)
- **Medications:** OTC Tylenol, 200mg, 2 tablets, every 6 hrs, PRN for pain; OTC CBD 250mg BID
- **Self-medicating drugs:** unknown
- **Occupation:** Kava Barista
- **Other:** lives in an apartment with partner Roxy and German shepherd mix dog Boo
- **PLOF:** independent
- **Diet:** Whole-food, plant-based diet
- **Exercise:** skateboards ~ 1hr/day
- **“Higher Power”:** atheist
- **Cognition:** alert and oriented to person, place, time, others, and situation
- **Mood / Affect:** within normal limits (WNL) / broad affect
- **Vitals:** temperature 98.6° F, heart rate 72 bts/min., respiration 18 br/min., blood pressure 130/85 mmHg, O<sub>2</sub> saturation 96%
- **Pain:** Visual Analog Scale (VAS): 0/10 at rest, 5/10 with weightbearing. Described as sharp. Location: right ankle
- **Pain Management:** OTC Tylenol, 200mg, 2 tablets, every 6 hrs; cold compress to affected area 20 minutes BID
- **Edema:** 3+ pitting edema in distal BLEs (bilateral lower extremities)
- **ROM:** WNL except right ankle limited in all planes
- **Muscle strength:** 5/5 except right ankle 2+/5
- **Transfers:** modified independence
- **Gait:** distance unknown, at least 500 ft, RLE WBAT. Requires bilateral crutches, requires standby assist (SBA) and verbal cues (VCs) for safety 2' impulsivity. Gait deviations: decreased right foot/ankle subphases, forward head, forward trunk flexion, bilateral abducted scapulae
- **TUG:** 20 sec.
- **Subjective:** “Saturday night I got into a fight with this jerk at the bar. He started it. Anyway, my boss told me I need to come here and do like you say so I can get back to work”
- **Patient’s self-stated goal:** “Get back to work ASAP!”
- **Preferred Learning styles:** Verbal/ Auditory, Visual/Viewing, AV/Experiencing, Kinesthetic/Motor Memory, Tactile/ Reaction, Humor

efficacy (McCartney, 2021). There are support groups for many other types of conditions, experiences, or issues as well evidence that supports their benefits (e.g., Barreau, 2019; Cook et al, 2010). Some examples are: bipolar affective disorder (Kelly et al, 2019), cancer (Shannonhouse et al, 2014; Zhou et al, 2020), dementia / Alzheimer's (Toms, 2015), depression (Kelly et al, 2019), grief (Lubas & de Leo, 2014), multiple sclerosis (Wakefield et al, 2013), PTSD (Spottswood et al, 2019), tinnitus (Pryce et al, 2019). There are also technology-based support groups (Yang, 2020), such online (Cunningham et al, 2008) and smartphone based (Yoo et al, 2020) support groups for those who abuse alcohol and online support groups for those with bipolar (Bauer et al, 2017) or group (Weaver et al, 2021). Those with certain illnesses, however, such as an eating disorder, benefit from a clinician led support group, but not necessarily a peer-led support group (Yildirim & Aylaz, 2022). In these cases, a support group for the family caregivers of those with an illness, such as eating disorders, are indicated (Pasold et al, 2010). Online support groups are of much benefit to the family caregivers of those with debilitating conditions who might not otherwise be able to participate in a support group (Friedman et al, 2018).

In addition to peer-led support groups, there are also **clinician-led support groups**. The characteristics of peer-led and clinician-led support groups are similar, with the obvious difference being the facilitator of the latter is a licensed clinician who has expertise in the particular disorder or illness, but does not necessarily have it him/herself.

#### *Application to physical therapy (PT):*

A physical therapist can be involved with support groups in various ways. For instance, she can refer a patient with a specific condition to the corresponding support group. Another option is to serve as a 'guest speaker' at a support group such as one for those who suffer from multiple sclerosis or Parkinson's disease. As a guest speaker, the physical therapist might provide exercise guidelines and discuss the benefits of exercise on the condition for which the support group has been established. Or, the physical therapist might provide educational guidelines regarding fall prevention. An example of a topic a physical therapist might offer to the family members of a person with a disorder and even debilitating condition is proper body mechanics and ergonomics when providing physical assistance to her loved one.

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## SUPPORT GROUP ASSIGNMENT



Locate a support group and offer to be and accepted to serve as a guest speaker about exercise or another topic in which you have some degree of expertise. Gather research related to the support group's condition (e.g.,

depression) and prepare an outline of your contribution. Your presentation should be brief, approximately 10 to 15 minutes, to allow time for group sharing – which you should only stay to observe if you are invited to do so. Integrate teaching and learning strategies, such as handouts.

An alternative is to locate a local support group and attend as a guest. In this case, you would also contact the facilitator and obtain her permission. Do not attend a support group without an invitation unless, of course, you have the condition, experience, or issue. Additional alternatives are to contribute to a mock support group with your classmates. In any case, you can self-select the support group or it can be assigned to you by your professor.

- Inclusion of physical therapist services in telehealth policy and regulation on the national and state levels to help society address the growing cost of health services, the disparity in accessibility of health services, and the potential impact of health work-force shortages;
- Advancement of physical therapy telehealth practice, education and research to enhance the quality and accessibility of physical therapist services; and
- Expansion of the broadband access to provide all members of society the opportunity to receive services delivered through electronic means” (2019t, para1).

## VIRTUAL PHYSICAL THERAPY / TELEHEALTH

Following the publication of the first telemedicine paper in 1974, which talked about it potentially serving as the missing link between hospitals and homes (Mark, 1974), telemedicine articles were published at a trickle until the early 1990s, following the creation of the www. And it was not until the start of 21<sup>st</sup> century that research related to telehealth physical therapy was published. Secondary to the spread of **COVID-19** across the globe in 2020, hundreds of studies about the use of virtual physical therapy have been recently conducted and published. Initially, telehealth physical therapy research focused on musculoskeletal outpatient physical therapy (e.g., Cottrell & Russell, 2020; Turolla et al, 2020). During the early phase of the pandemic (spring 2020), outpatient physical therapy revenues decreased 76-100% in 38% of clinics, by 51-75% in another 34% of clinics, and by 26-50% in another 40% of clinics (APTA, 2020t). Nearly half (45%) of outpatient clinics closed at least temporarily and, of these, 58% closed for more than 4 weeks (APTA, 2020t). The primary reasons for closure have been cited as professional judgement by the physical therapist owners (82%), patient cancellations (34%), lack of personal protective equipment (PPE) (26%), and their governor’s orders (26%) (APTA, 2020t).

On April 30, 2020, the Centers for Medicare and Medicaid Services (CMS) began to reimburse for **virtual / telehealth physical therapy**, which they defined as real-time, face-face technology (APTA, 2020t). Prior to COVID-19, only 2% of physical therapists were providing telehealth, but by July 2020 13% were pro-

viding virtual physical therapy to more than 10 patients per week, 11% to between six and ten patients per week, 45% to one to five patients per week, and 32% to fewer than one patient per week (APTA, 2020t). The majority of virtual physical therapy was provided via Zoom (45%) (APTA, 2020t). While 27% of physical therapists surveyed stated they faced no obstacles to providing virtual physical therapy, most reported barriers, including inadequate patient knowledge of technology (29%), lack of payer reimbursement (17%), inadequate facility technology (16%), physical therapists “not sure where to start” (9%), physical therapists lack of technology in their home (5%), state practice act did not permit it (2%), and other reasons (31%) (APTA, 2020t).

Some physical therapists surveyed by the APTA in 2020 responded they found telehealth helpful, others were not so enthusiastic. For example, while one physical therapist responded, “I have found some aspects of video visits highly helpful (e.g., seeing sitting position where they watch TV, seeing sleeping position using their pillow, etc.), and plan to continue with videos as part of my treatments after the pandemic” (APTA, 2020t, p9); another responded, “Patients really want hands-on care” (APTA, 2020t, p10).

As the COVID-19 pandemic continues (which it continues to do at the time of this printing), the use of telehealth in the provision of physical therapy continues to expand, not only in the outpatient setting, but also in the home health and skilled nursing facility (SNF) settings. (In the SNF setting, a rehab aide is pro-