CHRONIC DISEASE SPECIALIST

CERTIFICATION MANUAL

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COURSE INTRODUCTION

Chronic diseases are defined broadly as conditions that last one year or more and require ongoing medical attention or limit daily living or both. According to the CDC, heart disease, cancer, and diabetes are the leading causes of death and disability in the United States.
www.cdc.gov/chronicdisease

Objective: This course provides fitness professionals with the basic knowledge to understand the most prevalent chronic diseases, symptoms, causes, and treatment methods to work with this growing demographic safely and effectively. Learn valuable tools to improve client trust, decrease their pain, and increase quality of life. Level-up your career as a personal or group fitness professional with an in-depth knowledge of chronic diseases.

I. The Role of a Fitness Professional

At a very basic level, fitness professionals consist of fitness trainers and instructors who lead, direct, and inspire an individual or a group of individuals in exercises and practices that improve overall health. This includes but is not limited to cardiovascular exercise for the blood and heart, stretching to improve flexibility and joint mobility, and strength training to improve muscle strength.

Fitness professionals are:

- Instructors
- Coaches
- Facilitators
- Leaders
- Role models
- Motivators
- Referral sources

The fitness professional is responsible for instructing the most appropriate method for carrying out several routines or exercises to meet the needs of their client or clients. They will observe and closely monitor their clients performing all movements and exercises to provide proper form and safety cues to meet the needs of various skill and ability levels. The fitness professional will also create appropriate exercise programs, demonstrate exercises, observe progress, and offer constant feedback to their clients. In addition, the fitness professional should hold a current personal or group fitness training certificate, a CPR and first aid certificate, as well as a specialist certification to work with specific demographics from an accredited company. Finally, the fitness professional should be able to provide clients with the information to find essential resources regarding nutrition, lifestyle issues, and more.

While it is important to identify the role of the fitness professional, it is equally important to point out what fitness professionals are NOT!

Fitness professionals are not:

- Doctors
- Nutritionists/Registered Dietitians
- Psychologists/Therapists
- Pushers of Shakes, Pills, and MLM's
- Out for Personal Gains/Exploiting Client Reputations

A. Exercise Science & Practical Application

i. *Design Classes/Programs*

The average certified fitness professional may have a personal training certification from companies such as SCW, ACE, AFAA, NASM, ISCA, ISSA, ACSM, NCSF, W.I.T.S., CanFitPro, and the list goes on. They may also have an undergraduate degree or higher in exercise science, exercise physiology or in athletic training. These certifications have taught the personal trainer the basic anatomy and physiology that leads to being able to apply this in developing safe and effective total body exercise programs that touch upon the six functional movements of the human body: the squat, lunge, hinge, push, pull and carry.

ii. *Motivation & Clear, Safe Instruction*

As a fitness professional, your job is to motivate and empower your clients by convincing them to do things that they may not yet believe that they can do! It's your job to set goals, celebrate even the smallest accomplishments, and be a part of their journey to better health. However, it is also the job of a fitness professional to be a detective and figure out how to best motivate the vastly diverse individuals in which they train.

However, according to a study by the Trifocus Fitness Academy in 2020, "the solution to this riddle depends on the individual themselves and what they respond to. For example, one person – fitness wise – may be motivated to stay fit and trim in a bootcamp exercise environment. However, another may loathe and detest the thought of someone shouting at them when they try to exercise and may prefer the gentle encouragement of a personal trainer." (The Power)

There are many theories that apply to motivation. For example:

- Hertzberg's Two-Factor Theory which states that two factors influence motivation and satisfaction; in other words motivator factors and hygiene factors.
- Maslow's Hierarchy of Needs which states that people will be motivated by what their needs in life are.
- The Hawthorne Effect which states that people perform better when they are being watched. Something that all personal trainers in the fitness industry should take into consideration!
- The Expectancy Theory which states that people behave in a certain way; as they expect certain results to occur because of that behavior.
- The Attribution Theory which explains how we attach meaning to people's behavior.

It is the job of the fitness professional to build a strong trusting relationship with clients to figure out their "why" and help them both physically and mentally to achieve their goals. If a client hates running, then that is not an ideal exercise to keep them motivated. Because your emotions drive your motion, or actions, clients who enjoy the exercises and activities they complete with their trainer will be more likely to keep up with their routines and experience greater benefits.

B. Meeting Client Needs:

i. *Athletes & General Population*

When working with athletes and the general population, it is important to set realistic expectations that target their specific goals. For example, athletes may require sport-specific training exercises to hone in on various ranges of motion depending on their sport. In the meantime, the general

population may need more functional exercises that utilize a balance of foundational movements that enhance functional activities.

The most important thing to remember about working with these demographics is that they are usually motivated by experiencing success in their sport or by working towards a goal that may be aesthetically driven. An athlete may win a game or a match and be ready to push their bodies harder to experience more winning feeling. On the other hand, the general population may hire a trainer to help them lose weight, look better, tone up, or increase muscle strength. Seeing results will be the driving force in their ability to remain a lifelong client.

ii. *Youth/Pre or Post-Partum Fitness*

Training the youth is not only fun, but also a very rewarding experience. For this demographic, the focus needs to be on dexterity, coordination, flexibility, and effective age-appropriate strategies for physical fitness. For example, providing kids with a positive experience while exercising will help them value physical activity for a lifetime. It has been proven to lower stress and anxiety in children by providing an outlet to channel their energy.

When it comes to training pre or post-partum clients, it is highly recommended to take a pre or post-partum fitness specialist class. Having in-depth knowledge about the radical changes that are taking place both externally and internally are paramount when it comes to designing safe and effective exercises for a changing body. For example, when the hormone, relaxin is present in the body, it allows for an overstretching of the muscles that can lead to muscle tears or injuries.

iii. *Active Aging*

Determining the older adult's current physical activity status is very important when creating an exercise program and setting short and long-term goals. It is crucial to take as much time as needed to fully understand the client's past medical history, current medications, and imminent health concerns. Training the active aging client may mean you need to move the focus away from aesthetics or sports performance and into the world of functionality. Exercises will be focused on emulating the movements needed to function independently and navigate your day. Basic daily activities such as a sit to stand, climbing stairs, reaching, lifting, and more will guide your sessions.

iv. *Rehabilitation*

As a personal trainer working with clients needing some rehabilitation after leaving physical therapy or recovering from an injury or fighting the onset of a disease, it is paramount to seek the proper education for this niche of the fitness industry. After receiving the formal education and training to understand the importance of designing safe and effective programs to target specific rehabilitation goals, you will then keep an open communication with your client and possibly their doctor to best care for your client.

II. The NEW Role of a Fitness Professional

Today, fitness professionals cannot simply be an instructor or a coach who delivers the same generic workouts to all of their clients or groups of individuals. Their role has drastically changed with the times. While fitness professionals will still focus on improving cardiovascular exercise for the blood and heart, stretching to improve flexibility and joint mobility, and strength training to improve muscle strength, their role has grown significantly.

The new role of a fitness professional also consists of things such as:

- Writing and analyzing in-depth client intake forms
- Understanding both physical and mental roadblocks/obstacles
- Creating a safe and trusting environment for both trainer and client
- Educating yourself about various chronic diseases, addictions, disorders and more.
- Understanding when to refer out to doctors, nutritionists, etc...

A. Client Intake Forms (SAMPLE FORM ATTACHED)

As a fitness professional, it is important to be aware of any current or additional medications being taken by your client. Even before conducting an initial physical assessment, a client intake form should be filled out and reviewed and discussed by both you and the client. This is a great opportunity to begin an open and comfortable discussion about how they are feeling and address their current concerns. This should then be an ongoing conversation that is revisited at the start of each session. Think of this as a "mental check in."

For example, you may ask your client:

- ✓ How are you feeling today?
- ✓ What has been the best part of your day?
- ✓ Are you having a good day?
- ✓ What is on your mind today?
- ✓ Tell me one thing you are thinking about?
- ✓ What are you grateful for today?
- ✓ On a scale of 1-10, what is today? Why?

B. Chronic Diseases

Gone are the days when a fitness professional can work with every demographic just because they have passed a basic group fitness or personal training course. In fact, when it comes to working one-on-one or teaching a small or large group of people, a "one-size fits all approach" is not just dangerous, but irresponsible. As the number of people around-the-world who suffer from chronic

diseases continues to climb, so does the need for fitness professionals to seek greater education regarding the cause, symptoms and treatment methods for these diseases. There is a good chance that many of your clients may suffer from one or more co-morbidities that will be discussed in greater detail later in this course such as:

- Heart Disease
- Alzheimer's and Parkinson's Disease
- Arthritis/Autoimmune Disease
- Stroke
- Diabetes/Obesity
- Alcohol-Related Health Issues
- Cardiovascular Disease/Smoking-Related Health Issues

C. Exercise Science

i. *Design, Implementation & Execution*

There are 6 foundational movement patterns that characterize how the human body moves. As a fitness professional, if you want to be a strong, athletic, healthy human, you train all of these foundational patterns.

- Squat
- Hinge
- Lunge
- Push
- Pull
- Carry

But there's a problem. Not all the exercises that mimic these patterns are right for everybody, at least not right away. For example, if you start with the wrong squat variation for your body type, skill level, injury history or goal, your client may end up with an injury or experience an increase in pain. Therefore, when designing an exercise program for a client with a chronic disease, break it into three distinct parts.

1. The Dynamic Warm-up

By definition, a dynamic warm up is a series of movements performed dynamically with the purpose of restoring active flexibility and/or preparing the joints, connective tissues, and muscles for dynamic movement with the purpose to promote muscular force (via concentric, isometric, eccentric contractions). When designing a training program for a client with a chronic disease it is crucial to first make sure the client has clearance from a medical doctor and a proper client intake meeting has taken place. After your initial greeting and verbal assessment of the client, each session should begin with a series of dynamic movements. This portion of the training will generally last anywhere from 10-15 minutes during a 60-minute session or 5-7 minutes during a 30 minute session.

This is the time to assess your client's range-of-motion, flexibility, level of pain (if any), and begin to bring blood flow to the muscles and increase circulation. It is important to include both concentric and eccentric movements that will lengthen and contract the muscles in preparation for exercise. In addition, be advised that isometric stretching during the warm-up phase of any exercise program

could be contraindicated. If muscles are not "warm," attempting to hold a stretch can result in various injuries such as muscle pulls, strains, or sprains.

Examples of dynamic exercises suitable for a client with a chronic disease may include:

- Head/Neck Circles
- Shoulder Rolls/Shrugs
- Arm/Wrist Circles
- Shallow Squats/Lunges
- Walking/Marching in Place or Jogging (depending on client's fitness level)
- Hip Circles/Ankle Circles/ Toe Grips

2. The Focus of the Day (Workout)

The United States commonly refers to exercise as "working out," when in actuality, exercise should be something that we "work in" to our lives to live longer, healthier, and pain-free lives. As the trainer, be aware that many of your clients may be new to exercise and that it may be intimidating, scary, and uncomfortable. While you will be in constant communication with your client regarding the importance of each exercise in relation to how it will help to alleviate symptoms of arthritis through a combination of strength, flexibility, and balance, this is also the time to be empathetic and supportive.

After the dynamic warm-up is complete, it is time to introduce the "focus of the day." During this 20–40-minute portion of the training, this is where you will utilize a combination of multiplanar exercises to meet the needs of each individual client. Clearly communicating the "why" behind the exercises and how they will aid in reducing signs and symptoms of any chronic disease is key to building trust and respect from your client. However, as a chronic disease exercise specialist, always remember that chronic pain varies from person to person and what your client may be able to do one day, they may not be able to do the next.

Examples of effective exercises for a client with a chronic disease may include:

- Squats with or without aid/chairs/rails
- Walking up and down stairs
- Lateral Steps with or without a band
- Biceps/Triceps Curls with light weights
- Multi-Directional Lunges (Shallow)
- Knee Lifts/Toe Taps/Lateral Step Overs
- Bicycle Riding, Swimming, Water Walking/Jogging, Elliptical, Stair Climber

3. The Cool Down: Stretching, Flexibility, Breath & Mindfulness

The cool down phase, which consists of isometric stretching, breath awareness, and mindfulness practices is just as important as the dynamic warm-up and the exercise portion of the workout. The cool down allows the breath to gradually return to the same rhythm it had before the workout and greatly helps to prevent muscle soreness. It's common for the general population to feel stiff or sore after an exercise session, so it is crucial for someone with a chronic disease to spend even more time than the average person to complete a proper full-body and mind cool down. The cool

down may be the difference between clients experiencing slight muscle soreness and discomfort to experiencing additional pain that may leave them unable to exercise for an extended period of time.

It is also important to note that extended cool downs are usually implemented following aerobic exercise, however, someone with a chronic disease should also be engaging in an extended cool down after each session due to the type and current progression of their disease. The cool down should include muscle movements at a lower intensity combined with stretching. It is important to gradually lower the heart rate back to under 120 beats per minute during a cool down, instead of drastically stopping after exercise. One of the most important functions of the post-exercise cool down is to prevent dizziness. Strenuous exercise causes the blood vessels in your legs to expand, bringing more blood into the legs and feet.

D. Mindset, Empowerment and Mindfulness

According to Psychology Today, many studies have shown clearly that people with chronic diseases with the highest pain levels are the most likely to be anxious or depressed. Exactly why higher pain severity is associated with depression is not clear. It seems to be a two-way street.

Pain incites depression. Living with daily pain is physically and emotionally stressful. Chronic stress is known to change your levels of brain and nervous system chemicals. These stress hormones and neurochemicals – like cortisol, serotonin, and norepinephrine – affect your mood, thinking and behavior. Disrupting your body's balance of these chemicals can bring on depression in some people. Depression makes pain worse. Depression weakens a person's ability to deal and cope with pain. A person's perception about their condition, for example back pain, might become more negative when compared with individuals who are not depressed. (Borigini, 2004)

As a result, using positive reinforcement and encouragement while working with a client with a chronic disease is a must! Celebrate small accomplishments on a daily or weekly basis to empower the client and help motivate them as they continue their fitness journey. Unlike when you work with the general population or a sport-specific athlete, the goal of a client who suffers with chronic pain may be to simply stand and sit without pain. Any reports of lessened pain is a chance to celebrate with verbal adulations, a high five, fist pump, hug, or whatever you deem appropriate for your client.

E. Communication & Trust:

By definition, communication skills allow you to understand and be understood by others. This includes being able to effectively communicate ideas to others, actively listen in conversations, appropriately providing and receiving critical feedback and public speaking. For example, there are different types of communication skills you can learn and practice to help you become an effective communicator. Many of these skills work together, making it important to practice communication skills in different contexts whenever possible. Below are some effective ways to improve communication between yourself and your client suffering with chronic pain.

- Be Clear and Concise
- Practice Empathy
- Be Confident/Assertive
- Remain Calm and Consistent
- Display Appropriate Body Language

- Educate Yourself About Your Client (Pain levels/Disease type/Symptoms/Causes)
- "Flip the Script: How Fitness Professionals Can Overcome Challenging Clients" - Christine Conti, M.Ed., Arthritis Fitness Specialist Author. 2021.

If you are a fitness or medical fitness professional, there is a good chance that you have heard one or more of the following statements at least once in your career. In fact, you may even hear these statements on a daily basis.

1. I am a little tired and my muscles are a little sore from our last session, so I am going to cancel today and rest.

2. I don't want to do "that exercise" because I have never done it before.

3. My doctor told me that I should not be squatting, bending, reaching, twisting, etc...

I am sure that many of you reading this article can relate to at least one of the above and may have even let out a slight sigh of frustration when it comes to overcoming challenging clients. Overwhelming amounts of research show that "exercise can help you improve your health and fitness without hurting your joints. With your current treatment program, exercise can:

- Strengthen the muscles around your joints
- Help you maintain bone strength
- Give you more energy to get through the day
- Make it easier to get a good night's sleep
- Help you control your weight
- Enhance your quality of life
- Improve your balance

However, many of our clients still believe that exercise will aggravate their joint pain and stiffness, but that is not the case. Lack of exercise actually can make your joints even more painful and stiff." (Mayo Clinic) In fact, if you keep the muscles and surrounding tissue strong, it helps to maintain support for your bones. Choosing not to exercise weakens those supporting muscles, creating more stress on your joints.

While Fitness and medical fitness professionals understand the importance of exercise, the way we translate this to our clients is key. Oftentimes, clients receive misinformation along with mixed messages from doctors, family members, friends, and of course, social media. However, after decades of both academic and professional research working with special demographics, I have discovered a powerful technique to increase client willingness to improve their health through exercise. The answer lies not only in showing the client how each exercise emulates real-life situations, but also how it affects their independence.

For example, telling a client that, "today we will be working on how to safely and effectively execute a squat," is a lot different than saying, "Today we will be practicing our sit to stand movements so that you have the lower body strength and flexibility to rise from your favorite chair without assistance."

Most importantly, it is important to reiterate to your client that their lack of strength, mobility, and balance leads to a more sedentary lifestyle that will decrease their ability to function independently

as time progresses. Additionally, muscle atrophy, joint immobility and poor flexibility are key indicators that functional movements, or movements that are required to perform everyday tasks, will soon be a thing of the past. If a client is unwilling to perform various exercises, here are some conversation starters

1. Did you know that this is not just an exercise, but one of the foundational movements to support strength, balance and flexibility in your everyday life?

2. Do you know the definition of functional fitness?

3. Do you know that this isn't just an exercise, but will help you walk up and down the stairs, get up from a seat, carry your groceries, and pick up a grandchild?

4. Are you ready to give up your independence?

III. What is a Chronic Disease?

According to the CDC, “chronic diseases are defined broadly as conditions that last 1 year or more and require ongoing medical attention or limit activities of daily living or both. Chronic diseases such as heart disease, cancer, and diabetes are the leading causes of death and disability in the United States. They are also leading drivers of the nation’s $3.8 trillion in annual health care costs.” (Center for Disease Control and Prevention)

Many chronic diseases are caused by a short list of risk behaviors:

1. **Tobacco use and exposure to secondhand smoke.**

Fast Facts

- Tobacco use is the leading cause of preventable disease, disability, and death in the United States.
- About 34 million US adults smoke cigarettes, and 58 million nonsmokers are exposed to secondhand smoke. Every day, about 1,600 young people under age 18 try their first cigarette, and nearly 200 become daily cigarette smokers.
- Cigarette smoking causes more than 480,000 deaths annually, including 41,000 deaths from secondhand smoke. For every American who dies because of smoking, at least 30 are living with a serious smoking-related illness.
- Smoking-related illness costs the United States over $300 billion each year, including more than $225 billion in direct medical costs.
- CDC is at the forefront of the nation’s efforts to reduce deaths and prevent chronic diseases that result from tobacco use and secondhand smoke exposure.

2. **Poor nutrition, including diets low in fruits and vegetables and high in sodium and saturated fats.**

Fast Facts

- 1 in 4 infants is exclusively breastfed through 6 months of age.
- 14% of children aged 1 to 2 years and 16% of pregnant women are iron deficient.
- Fewer than 1 in 10 US adults and adolescents eat enough fruits and vegetables.
- 6 in 10 young people and 5 in 10 adults consume a sugary drink on a given day.
- US diets are high in added sugars, sodium, and saturated fats.
- The Dietary Guidelines for Americans 2020–2025, provides information on healthy eating patterns for Americans at every stage of life, from birth through older adulthood.

- CDC works to increase healthy food options in early care and education facilities, schools, workplaces, and communities.

3. Lack of physical activity.

Fast Facts

- Only 1 in 4 US adults and 1 in 5 high school students meet the recommended physical activity guidelines.
- About 31 million adults aged 50 or older are inactive, meaning that they get no physical activity beyond that of daily living.
- Low levels of physical activity can contribute to heart disease, type 2 diabetes, some kinds of cancer, and obesity.
- Low levels of physical activity are associated with an estimated $117 billion annually in health care costs.
- CDC works to increase physical activity by promoting better community design and more active school and work environments.

4. Excessive alcohol use.

Fast Facts

- Excessive alcohol use is responsible for 95,000 deaths in the United States each year, including 1 in 10 total deaths among working-age adults.
- In 2010, excessive alcohol use cost the US economy $249 billion, or $2.05 a drink. About 40% of these costs were paid by federal, state, and local governments.
- Binge drinking is responsible for almost half the deaths and three-quarters of the costs due to excessive alcohol use.
- 9 in 10 adults who binge drink do not have a severe alcohol use disorder.
- CDC works to strengthen the scientific foundation for preventing excessive alcohol use.

A. More Startling Statistics:

Every day, millions of people with chronic conditions struggle to manage their symptoms from chronic diseases. Diabetes, arthritis, hypertension, lung disease, obesity and other chronic diseases can make life difficult to manage for millions of older adults, often forcing them to give up their independence.

The Challenges of Chronic Diseases.

- About 85% of older adults have one chronic disease.
- 60% of older adults have 2 or more chronic conditions
- Chronic diseases can affect a person's quality of life and independence as they age.

The Cost of Chronic Diseases.

The traditional medical model of caring for people with chronic diseases—which focuses more on the illness than on the patient—is expensive and often ineffective.

- Chronic diseases are the leading drivers of increasing the nation's health care costs to $3.8 trillion each year.

- Chronic pain and diabetes are the most expensive chronic conditions with annual spending totaling $635 billion and $327 billion, respectively.
- More than two-thirds of all health care costs are for treating chronic diseases.
- 95% of health care costs for older Americans can be attributed to chronic diseases.
- Less than 1% of healthcare dollars are spent on prevention to improve overall health.

B. Epidemiology

Epidemiology is defined as the study and analysis of the distribution (who, when, and where), patterns and determinants of health and disease conditions in defined populations. It is a cornerstone of public health, and shapes policy decisions and evidence-based practice by identifying risk factors for disease and targets for preventive healthcare. Epidemiologists help with study design, collection, and statistical analysis of data, amend interpretation and dissemination of results (including peer review and occasional systematic review). Epidemiology has helped develop methodology used in clinical research, public health studies, and, to a lesser extent, basic research in the biological sciences.

As a chronic disease fitness specialist, it is important to understand why the number of people being diagnosed with chronic illnesses is rapidly increasing around the world. With the United States leading the way with the highest number of diagnosed chronic diseases, it is imperative to look at some of the common characteristics of the healthiest places on earth.

As stated in Dan Buettner's book, The Blue Zones, Second Edition: 9 Lessons for Living Longer From the People Who've Lived the Longest, he describes how the people inhabiting Blue Zones share common lifestyle characteristics that contribute to their longevity. For example, the six shared characteristics among the people of Okinawa, Japan, Sardinia, Italy and Loma Linda, California Blue Zones are as follows. (Buettner, 2012)

- Family – put ahead of other concerns
- Less smoking
- Semi-vegetarianism – the majority of food consumed is derived from plants
- Constant moderate physical activity– an inseparable part of life
- Social Engagement – people of all ages are socially active and integrated into their communities
- Legumes – commonly consumed

Buettner also provides a list of nine lessons, covering the lifestyle of people who reside in blue zones. These values have been said to greatly influence both physical and emotional health and positively impact quality of life and life span.

IV. Chronic Disease Causes, Symptoms & Treatments

A. Cancer:

"Cancer is a disease in which some of the body's cells grow uncontrollably and spread to other parts of the body. Cancer can start almost anywhere in the human body, which is made up of trillions of cells. Normally, human cells grow and multiply (through a process called cell division) to form new cells as the body needs them. When cells grow old or become damaged, they die, and new cells take their place.

Sometimes this orderly process breaks down, and abnormal or damaged cells grow and multiply when they shouldn't. These cells may form tumors, which are lumps of tissue. Tumors can be cancerous or not cancerous (benign). Cancerous tumors spread into, or invade, nearby tissues and can travel to distant places in the body to form new tumors (a process called metastasis). Cancerous tumors may also be called malignant tumors. Many cancers form solid tumors, but cancers of the blood, such as leukemias, generally do not.

Benign tumors do not spread into, or invade, nearby tissues. When removed, benign tumors usually don't grow back, whereas cancerous tumors sometimes do. Benign tumors can sometimes be quite large, however. Some can cause serious symptoms or be life threatening, such as benign tumors in the brain."(National Cancer Institute)

Cancer cells differ from normal cells in many ways. For instance, cancer cells:

- Grow in the absence of signals telling them to grow. Normal cells only grow when they receive such signals.
- Ignore signals that normally tell cells to stop dividing or to die (a process known as programmed cell death, or apoptosis).
- Invade into nearby areas and spread to other areas of the body. Normal cells stop growing when they encounter other cells, and most normal cells do not move around the body.
- Tell blood vessels to grow toward tumors. These blood vessels supply tumors with oxygen and nutrients and remove waste products from tumors.
- Hide from the immune system. The immune system normally eliminates damaged or abnormal cells.
- Trick the immune system into helping cancer cells stay alive and grow. For instance, some cancer cells convince immune cells to protect the tumor instead of attacking it.
- Accumulate multiple changes in their chromosomes, such as duplications and deletions of chromosome parts. Some cancer cells have double the normal number of chromosomes.
- Rely on different kinds of nutrients than normal cells. In addition, some cancer cells make

energy from nutrients in a different way than most normal cells. This lets cancer cells grow more quickly.

B. Heart Disease: (*The LEADING cause of death in the United States*)

Heart disease describes a range of conditions that affect your heart.

Heart diseases include:

- Blood vessel disease, such as coronary artery disease
- Heart rhythm problems (arrhythmias)
- Heart defects you're born with (congenital heart defects)
- Heart valve disease
- Disease of the heart muscle
- Heart infection Many forms of heart disease can be prevented or treated with healthy lifestyle choices.

Symptoms Include:

- Chest pain, chest tightness, chest pressure and chest discomfort
- Pain, numbness, weakness or coldness in your legs
- Pain in the neck, jaw, throat, upper abdomen or back
- Fluttering in your chest
- Tachycardia
- Bradycardia
- SOB
- Lightheadedness
- Dizziness
- Syncope

C. Alzheimer's:

A type of brain disorder that causes problems with memory, thinking and behavior. This is a gradually progressive condition. Alzheimer's causes a gradual decline in memory, thinking and reasoning skills.

Symptoms depend on the stage of the disease:

Early symptoms include:

- Memory loss
- Misplacing items
- Forgetting the names of places and objects
- Repeating themselves regularly, such as asking the same question several times
- Becoming less flexible and more hesitant to try new things

Middle-stage symptoms include:

- Increasing confusion and disorientation
- Obsessive, repetitive or impulsive behavior
- Delusions (believing things that are untrue)
- Problems with speech or language (aphasia)
- Disturbed sleep
- Changes in mood, such as frequent mood swings, depression and feeling increasingly anxious, frustrated or agitated
- Difficulty in performing spatial tasks, such as judging distances
- Agnosia

Later symptoms include:

- Difficulty in changing position or moving around without assistance
- Considerable weight loss – although some people eat too much and put on weight
- Gradual loss of speech
- Significant problems with short and long-term memory

D. Parkinson's Disease:

A chronic and progressive movement disorder that initially causes tremor in one hand, stiffness or slowing of movement. Parkinson's disease symptoms may vary from person to person. Early signs may be mild and may go unnoticed. Symptoms often begin on one side of the body and usually get worse on the same side, even after symptoms begin to affect both sides.
Signs and symptoms may include:

- Tremors, trembling of hands, arms, legs, jaw and face
- Stiffness of the arms, legs and trunk
- Slowness of movement
- Poor balance and coordination
- Speech difficulty

E. Arthritis/Autoimmune Disease

A condition with swelling and tenderness of one or more joints. The common symptom includes pain and stiffness in joints. Symptoms vary depending on the type of arthritis. The most common symptoms in the initial stages are:

- Joint pain- knee or hip pain
- Swelling
- Redness in the joints
- Tenderness in joints
- Loss of appetite
- Fever

F. Stroke:

Occurs when the supply of blood to the brain is reduced or blocked completely, which prevents brain tissue from getting oxygen and nutrients. As different parts of brain control different parts of the body, symptoms will depend on the part of the brain affected and the extent of damage.
The main symptoms are:

- Paralysis or numbness or inability to move parts of The face, arm, or leg - particularly on one side of The body
- Confusion- including trouble with speaking
- Headache with vomiting
- Trouble seeing in one or both eyes
- Metallic taste in mouth
- Difficulty in swallowing
- Trouble in walking (impaired coordination)
- Dystonia
- Alexia
- Agnosia

G. Diabetes/Obesity

Diabetes is a disease in which the body's ability to produce or respond to the hormone insulin is impaired, resulting in abnormal metabolism of carbohydrates and elevated levels of glucose in the blood and urine.

Diabetes symptoms vary depending on how much your blood sugar is elevated. Some people, especially those with prediabetes or type 2 diabetes, may sometimes not experience symptoms. In type 1 diabetes, symptoms tend to come on quickly and be more severe. Some of the signs and symptoms of type 1 diabetes and type 2 diabetes are:

- Increased thirst
- Frequent urination
- Extreme hunger
- Unexplained weight loss
- Presence of ketones in the urine

Obesity is diagnosed when your body mass index (BMI) is 30 or higher. To determine your body mass index, divide your weight in pounds by your height in inches squared and multiply by 703. Or divide your weight in kilograms by your height in meters squared. For most people, BMI provides a reasonable estimate of body fat. However, BMI doesn't directly measure body fat, so some people, such as muscular athletes, may have a BMI in the obesity category even though they don't have excess body fat.

Alcohol-Related Health Issues: Drinking too much – on a single occasion or over time – can take a serious toll on your health.

Here's how alcohol can affect your body:

Brain: Alcohol interferes with the brain's communication pathways, and can affect the way the brain looks and works. These disruptions can change mood and behavior, and make it harder to think clearly and move with coordination.

Heart: Drinking a lot over a long time or too much on a single occasion can damage the heart, causing problems including:

- Cardiomyopathy – Stretching and drooping of heart muscle
- Arrhythmias – Irregular heart beat
- Stroke
- High blood pressure

Liver: Heavy drinking takes a toll on the liver, and can lead to a variety of problems and liver inflammations including:

- Steatosis, or fatty liver
- Alcoholic hepatitis
- Fibrosis
- Cirrhosis

Pancreas: Alcohol causes the pancreas to produce toxic substances that can eventually lead to pancreatitis, a dangerous inflammation and swelling of the blood vessels in the pancreas that prevents proper digestion.

Cancer: According to the National Cancer Institute: "There is a strong scientific consensus that alcohol drinking can cause several types of cancer. In its Report on Carcinogens, the National Toxicology Program of the US Department of Health and Human Services lists consumption of alcoholic beverages as a known human carcinogen.

The evidence indicates that the more alcohol a person drinks—particularly the more alcohol a person drinks regularly over time—the higher his or her risk of developing an alcohol-associated cancer. Even those who have no more than one drink per day and binge drinkers (those who consume 4 or more drinks for women and 5 or more drinks for men in one sitting) have a modestly increased risk of some cancers. Based on data from 2009, an estimated 3.5% of cancer deaths in the United States (about 19,500 deaths) were alcohol related."(For more information regarding specific types of cancer, please visit the National Cancer Institute page "Alcohol and Cancer" at www.cancer.gov/about-cancer/causes-prevention/risk/alcohol/alcohol-fact-sheet (last accessed August 20, 2021).

Immune System: Drinking too much can weaken your immune system, making your body a much easier target for disease. People who drink chronically are more liable to contract diseases like pneumonia and tuberculosis than people who do not drink too much. Drinking a lot on a single

occasion slows your body's ability to ward off infections – even up to 24 hours after getting drunk.

i. ***Cardiovascular Disease/Smoking-Related Health Issues:***

Cardiovascular diseases (CVDs) are disorders of the heart and blood vessels and include coronary heart disease, cerebrovascular disease, rheumatic heart disease and other conditions . Four out of five CVD deaths are due to heart attacks and strokes. The most common cardiovascular disease is coronary heart disease. "According to the American Heart Association, around 15,500,000 people in the United States are affected by it." (The 5 Most Common)

V. Training the Brain

Clients who have been diagnosed with a chronic illness may be experiencing a breakdown in communication between the brain and the body. Synapses may not function correctly, causing unintentional or non-existent muscle movements or loss of coordination and dexterity. Therefore, it is crucial to understand the function of various parts of the brain as they relate to overall health and wellness. In fact, a proper exercise program will not only help stimulate various parts of the brain, but also help create new neural pathways to improve muscle function and memory.

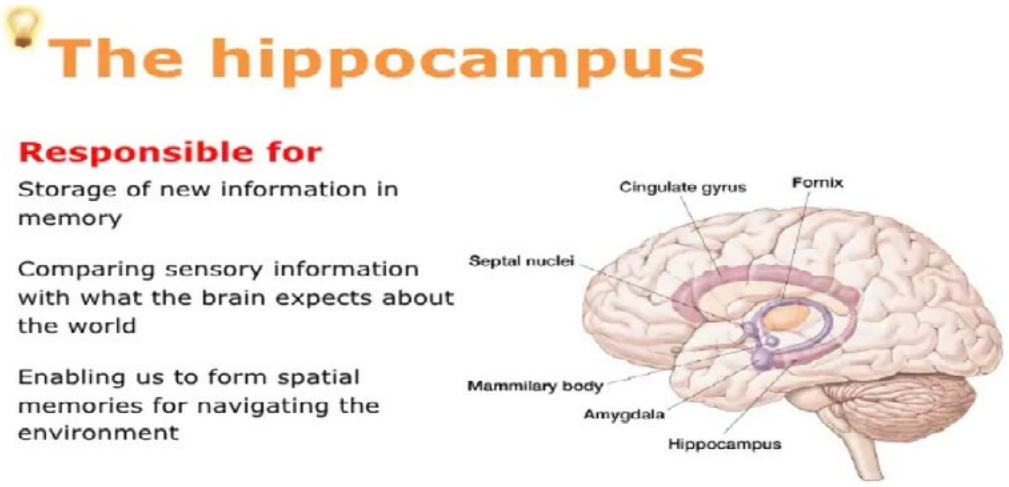
A. Neuroplasticity:

"Neuronal plasticity, or neuroplasticity, is the biological process by which the brain reorganizes its synapses in response to stimuli. The brain always aims to optimize its functioning, and because of this, there are biological systems in place which frequently enhance engaged-in patterns of thinking, making relevant neural networks stronger, and irrelevant ones weaker, supporting processes such as learning and memory." (Moore, 2019)

If this definition is confusing, that is okay! Neuroplasticity simply refers to the biological process whereby the brain's activity and responses to stimuli influence the strength or weakness of specific synapse to synapse connections or even grows new connections. This is extremely important when it comes to working with clients who suffer from chronic illnesses that have both neurological and physical symptoms such as: multiple sclerosis, various cancers, Alzheimer's, Stroke, Parkinson's and more. Neuroplasticity is incredibly important because it is at the root of essential human experiences and involves brain-body communication.

B. Frontal Lobe, Temporal Lobe & Hippocampus

Exercise is known to strengthen the body, but are you implementing exercises for the brain? Be sure to understand the functions of the frontal lobe, temporal lobe, and the hippocampus when designing an exercise program for an individual with a chronic disease. Once you gain the understanding of the causes and symptoms of the specific chronic disease, then you will best be able to implement exercises that meet the client's specific needs.

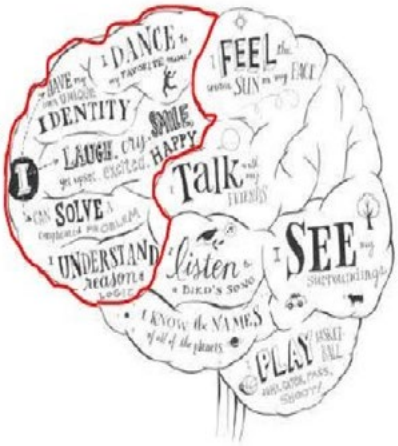


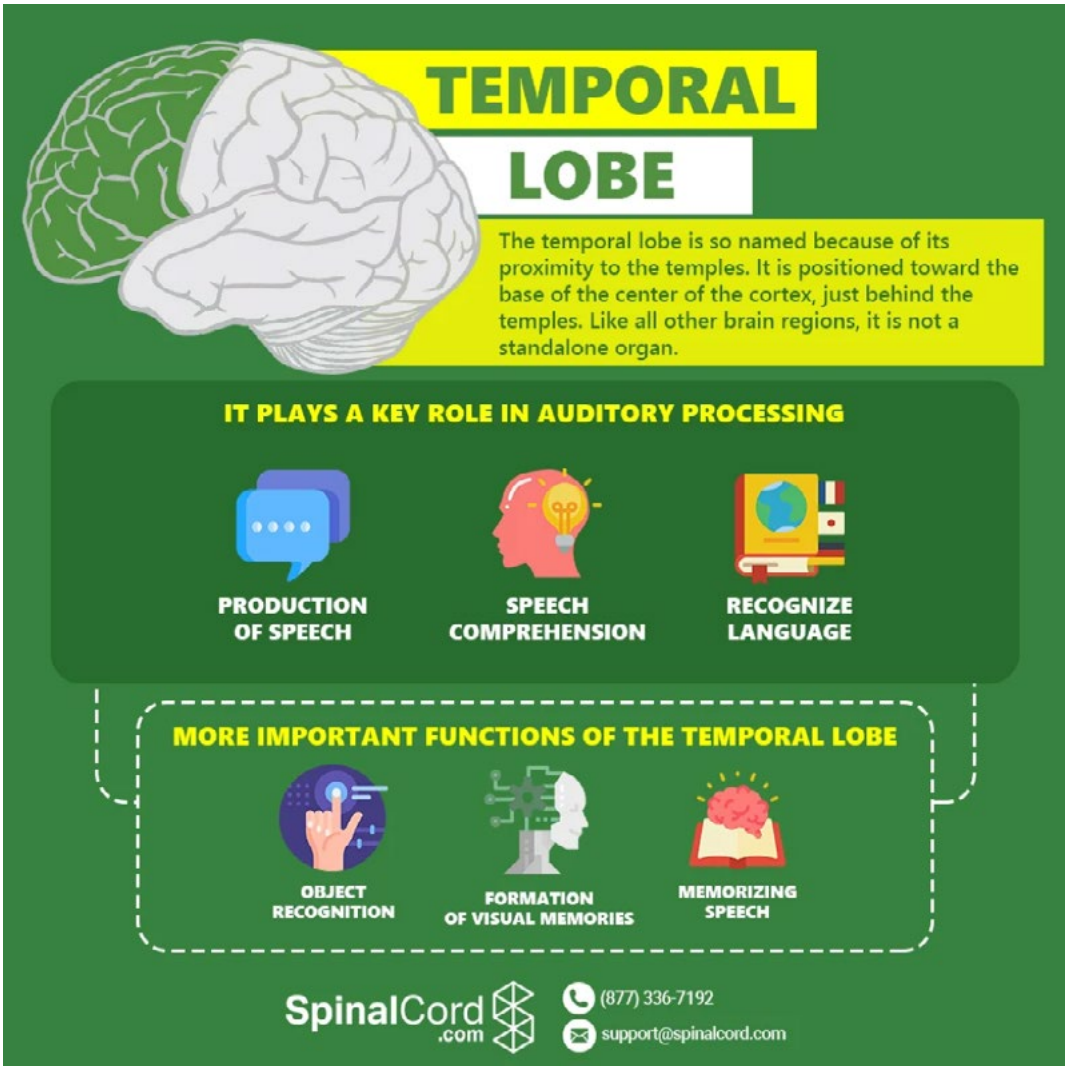
Functions

The Frontal lobe is considered the emotional control center and the home of our personality.

The frontal lobe controls higher level thinking:

- Reasoning
- Planning
- Language
- Long-term Memory
- Impulse control
- Problem Solving
- Emotions
- Judgment
- Motor Function
- Initiation
- Social/ Sexual Behavior





VI. Program Design Special Considerations

A. Physical Disabilities, Ports, Sensitivities, Muscle Weakness, Swelling & Pain.

For clients living with chronic diseases, there is a good chance they also experience chronic pain, muscle imbalances, atrophy, swelling or edema of the joints, and more. Those undergoing chemotherapy treatments may have ports located on their arms, chest, back, or even on their thigh. They may be experiencing enhanced sensitivity to light or noise as well as hearing or vision difficulties. Medications may slow down reaction times, cloud the brain, and cause an increase in lethargy and mood.

As a result, designing an exercise program for those with chronic conditions focuses on functionality over aesthetics. Each exercise must have an intention that addresses the individual's weaknesses or imbalances as it relates to performing daily functional tasks such as: walking, sitting to standing, stair climbing, bending, twisting, reaching, etc… Each exercise must protect the joints, while the client maintains the proper kinetic chain.

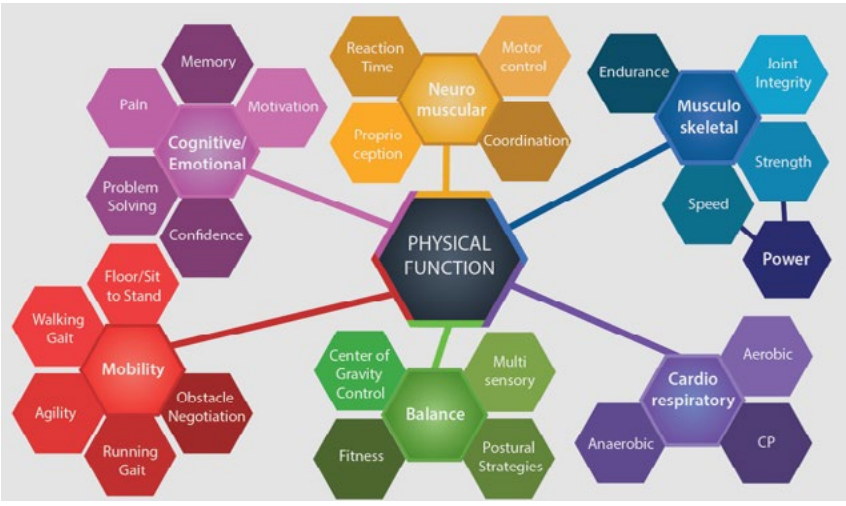
Encourage clients to trust their instincts and avoid exerting more energy than they think their joints can handle. Slowly increasing pain-free exercise length and intensity is the key! Focus on the 6 foundational movement patterns that characterize how the human body moves.

As an effective fitness professional, you must implement all foundational patterns.

- Squat
- Hinge
- Lunge
- Push
- Pull
- Carry

In addition, when designing exercise programs for those with chronic diseases, each movement will be clearly defined to promote:

- Range of Motion
- Balance, Stability and Flexibility
- Endurance, Strength or Agility
- Breath and Mindfulness



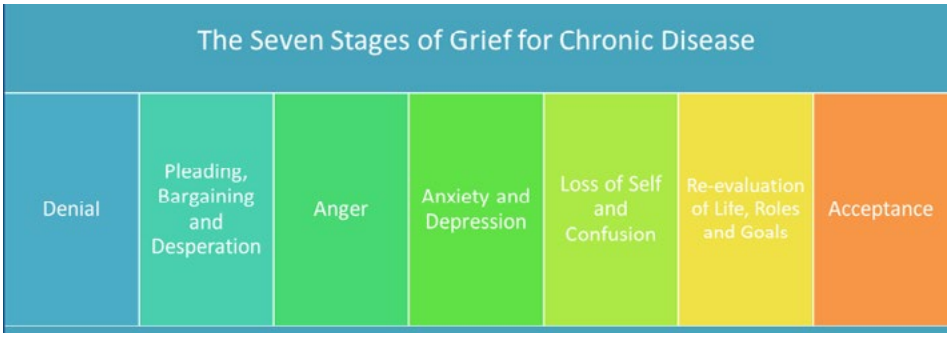
When it comes to program design, there are many factors to consider. As we say, program design is an art and a science. Here are 8 elements to consider when creating programs for your mature clients using a Functional Aging Training model:

1. **Focus on Functional Tasks** your clients need to do on a daily or weekly basis. For example, movements could include tasks like carrying groceries, laundry, or household items; picking up items; climbing stairs; putting something on a shelf; or looking under the couch for the darn remote.
2. **Think about what your client can do** and less about what they can't do. Focus on strengths and abilities, not just limitations. Design your sessions for success!
3. **Focus on Balance Challenges** your client might face on a weekly or monthly basis: navigating a parking lot, stops, starts, turns, stepping over a parking block, stepping up or down a curb, changing terrains from grass to dirt to pavement. Tasks inside could include stairs at home, stepping over pets, changing flooring from hardwood to carpet, or catching your foot on something.
4. **Ask yourself, "What can we do that is fun?"** Be sure your session has some fun activities; give everyone a reason to smile at some point. Exercise should be enjoyed!
5. **Include an obstacle course or balance game**. Maybe play red light/green light or get out the agility ladder. You could set up a pretend creek with various colored stones to get across without getting wet. Play with balloons or Nerf balls. The possibilities are endless!
6. **Do get down on the floor**. Whether it is for push-ups, bird-dogs, or planks, be sure to incorporate some floor training.
7. **Remember to think about all 6 Domains of Human Function** from the Functional Aging Training Model: Musculoskeletal, Cardiovascular, Balance, Mobility, Neuromuscular, and Cognitive/Emotional.
8. **Lastly and most importantly, care about your clients**: call them by name, ask them about their lives, or give them high fives and hugs (well these might have to wait for a few more months). Be the best part of their day. Enjoy being with them and appreciate them . . . you might be the only one that does all day.

B. Emotional Support & Motivation

Perhaps one of the most important roles of a chronic disease fitness specialist is to provide the emotional support and motivation needed to best help their client. Because there is a direct link between chronic pain, depression, anxiety, and grief, the fitness professional must be deeply empathetic and understanding when designing individual exercise programs for this demographic. For example, it is important to familiarize yourself with the seven stages of grief and chronic disease as outlined by Robyn Caruso who is the Founder of The Stress Management Institute for Health and Fitness Professionals.

Understanding The Seven Stages of Grief and Chronic Disease



Adapted from: Pratt, Amanda. "7 Stages of Grief for Chronic Pain and Chronic Illness: St. Petersburg Therapist." Chronic Illness Therapy, 3 Aug. 2018, imaginelifetherapy.com/7-stages-of-grief-for-chronic-pain-and-illness/.

It is essential to understand the Seven Stages of Grief and chronic disease if you plan to work with clients living with a chronic disease. Many individuals have heard of the five stages of grief created by Elizabeth Kubler – Ross in 1969. This model is used to explain the stages of grief over the loss of a loved one. There has been an updated model called the Seven Stages of Grief for Chronic Pain and Chronic Illness by Dr. Jennifer Martin, PsyD of imaginelifetherapy.com.

According to imaginelifetherapy.com, there are seven stages of grief for chronic disease: denial, pleading, bargaining and desperation, anger, anxiety and depression, loss of self and confusion, and acceptance. Clients can go from one stage to another until finally reaching acceptance. An individual, for example, can go from denial to anger and back to denial. Everyone will go through the stages on their own timing. There is no set time for anyone to reach acceptance of their situation. If your client can see positive changes after working with you, their outlook will be more positive. As they become stronger and learn more skills, clients will become more ambulatory and be able to move more over time.

Many times, clients will be experiencing their symptoms (chronic disease symptom cycle) and the stages of grief simultaneously. We usually think of grief with respect to the loss of a loved one. With chronic disease, your client may be grieving the life they used to live. Knowing that their lives may change because of an illness is very stressful. In addition, the individual may be thinking about the future and how their health will be ten years from now. As a Health – Fitness Professional, you need to help your client to be present and in the moment. The work that your client does today will influence how mobile they are ten years from now. If they are discouraged by the big picture, it will be harder for them to stay focused.

Each stage of grief has its own parameters and can give you insight as to which stage the client is currently in. Empathy and support are a critical part of helping a client to get through the stages of grief. Taylor exercise programming to what your client can handle each time they train. If Someone is having a rough day, you can offer the client a meditation session instead of a training session. This trade-off will make the client feel more open and may even suggest meditation if they are not mentally ready for a training session.

To know which stage of grief a client may be in, you must have a firm understanding of what each stage is. Denial is the first stage in which the individual was just diagnosed and is in shock. They cannot believe that they are diagnosed with a chronic disease. They start to wonder how they will make changes and live a good life. Shock can help the person to decide to move on to the next stage and start working through the stages. It may also backfire if the individual who has the condition thinks that it will eventually go away or be okay.

The next stage is pleading, bargaining, and desperation, where the client tries really hard to bargain or plead to not have a chronic illness. The individual also wishes really hard that they could go back to the life that they had. They may feel guilty and blame themselves for becoming sick and wondering if they could have done more to prevent their illness. Guilt usually comes with bargaining as the person blames themselves for their situation.

Anger is a crucial stage for individuals to begin the healing process. There is no specific timeline for the client to get through the anger stage. Please note that a client may come in angry some days when training, but they are not angry with you. Try to remain empathetic and patient as the individual goes through this stage. Keep in mind that everyone on the healthcare team often sees anger from the newly diagnosed individual who has a chronic illness. It is normal for the client to be angry at their doctor, caregiver, family, friends, and even you, their trainer. However, they will most

likely apologize after showing you that they are visibly angry. This stage comes later in the process when the disease progresses, and the individual realizes that life will change.

Anxiety and depression will set in next as life changes are solidified. The feelings of depression can be substantial and seem to the client like they will never go away. If a client starts to withdraw, offer meditation instead of a training session to keep the client on track. Try to also be understanding about their condition and how they are feeling. If they must cancel with you, ask that they do so within a certain amount of time as your time is valuable as well. There may be anxiety about the future and the unknown as the person wonders what will happen to them.

The loss of self and confusion is very real for individuals with a chronic illness. In this stage, life has changed so much for this individual that they do not recognize themselves. As a result, they cannot do what they used to and have to redefine themselves and decide how to do that. This stage may happen at the same time as anxiety and depression or separately.

In the stage of re-evaluation of Life, Roles, and Goals, the client will be thinking about how they can move forward as a wife, mother, husband, father, sibling, and friend. They are forced to re-evaluate how they fit into the picture and what that means in daily life, figuring out how to go about daily activities and what work will look like for them.

The final stage is acceptance, in which the client accepts his or her new reality. The client is not usually happy with it, but they learn how to deal with their new norm. They strive to learn new skills to make life better and discover new things that bring joy into their lives. In this stage, the client will be most accepting of trying new exercises and stress relief modalities in their training sessions.

C. Safe & Effective Exercise Program Creation

As a Chronic Disease Fitness Specialist, it is your responsibility to make sure that you are current on all of your personal or group fitness certifications from all major fitness organizations in addition to holding current First Aid/CPR/AED certificates. Then, it is paramount that you fully comprehend the definition of a chronic disease, understand the client's chronic disease, and identify the areas where they are experiencing chronic pain or symptoms. Now that you have fully reviewed the client intake form and identified the individual goals of the client, it is time to begin developing a safe and effective exercise program, starting with functional movements to establish a baseline.

The Dynamic Warm-Up Exercises:

- Head/Neck Circles
- Shoulder Rolls/Shrugs
- Arm/Wrist Circles
- Shallow Squats/Lunges
- Walking/Marching in Place or Jogging
- Hip Circles/Ankle Circles/ Toe Taps

The Focus of the Day Exercises! (Flexibility, Strength, Balance, Coordination, Mindfulness, Mobility, etc…)

- Squats with or without aid/chairs/rails
- Walking up and down stairs
- Lateral Steps with or without a band

- Biceps/Triceps Curls with light weights
- Multi-Directional Lunges (Shallow)
- Knee Lifts/Toe Taps/Lateral Step Overs
- Bicycle Riding, Swimming, Water Walking/Jogging, Elliptical, Stair Climber (as appropriate)

Effective Stretching/Mindfulness Exercises: (Seated, Standing or Lying Down)

- Savasana
- Guided Imagery
- Corpse Pose
- Cat/Cow Pose (variation of spinal flexion/extension)
- Overhead Reach
- Calf Stretches on step/against wall/modified Downward Dog
- Myofascial Release Foam Rolling (circulation/blood flow)
- Practicing Being Present (seated or lying down)

*** Let's get up and try these movements together and identify the "WHY" behind each exercise as it relates to helping to reduce symptoms of chronic diseases.**

VII. Stay In Your Lane

A. Refer to Specialists

As previously discussed, fitness professionals have a very important role in helping people improve their overall health and wellness. This includes being empathetic, supporting, encouraging, and open to the needs of the client. A fitness professional helps people improve strength, balance, flexibility, coordination, agility, and endurance. However, a fitness professional is not a doctor, unless of course you are a doctor. Therefore, it is not your job to diagnose injuries or diseases, nor is it your job to prescribe diets, push supplements, or encourage various medications. Staying in your scope of practice is key and knowing when to refer your clients to speak with a doctor or specialist may just save their life.

i. *Medications, Nutrition & Supplements*

Under no circumstances should a fitness professional who works with chronic conditions urge clients to take specific medications, write nutrition plans, or push supplements. However, it is paramount that the fitness professional be aware of some of the medications and side-effects that your client may be experiencing. Below are just a few of the medications that your clients may be taking for their chronic conditions. Be sure to ask them what side-effects that may be experiencing to provide the most safe and effective exercise programs.

Stroke Medications: After a stroke, your doctor may prescribe oral drugs, such as clopidogrel (Plavix) or warfarin (Coumadin). These are used to thin your blood in order to reduce the risk of stroke in the future. Statins have also been shown to reduce the incidence of future stroke. (Stroke Medications, 2019)

Parkinson's Medications: Dopamine precursor: Drug which can pass through to the brain and readily get converted to dopamine. Helps in managing Parkinson's disease. Levodopa, Catechol-O-methyltransferase (COMT) inhibitors: Inhibits the action of catechol-O-methyltransferase, an enzyme which is involved in degrading neurotransmitters. Entacapone . Tolcapone . Opicapone . Nitecapone, Dopamine agonists: Activates dopamine receptors and helps in managing the disease. Bromocriptine, Pergolide, Pramipexole, Ropinirole, MAO-B inhibitors: Increases the amount of dopamine in the basal ganglia by inhibiting the activity of an enzyme that breaks down dopamine. (Parkinson's, 2021)

Alzheimer's Medications: Aducanumab (Aduhelm™): anti-amyloid antibody intravenous (IV) infusion, Cholinesterase inhibitors (Aricept®, Exelon®, Razadyne®) are prescribed to treat symptoms related to memory, thinking, language, judgment and other thought processes. These medications prevent the breakdown of acetylcholine (a-SEA-til-KOHlean), a chemical messenger important for memory and learning. These drugs support communication between nerve cells. Glutamate regulators (Namenda®)are prescribed to improve memory, attention, reason, language and the ability to perform simple tasks. This type of drug works by regulating the activity of glutamate, a different chemical messenger that helps the brain process information. (Alzheimer's, 2021)

VIII. Growing Your Fitness Business

A. Marketing Your New Skills: Increase Client Base & Client Retention

Social Media & Beyond: Creating specific business pages on the following social media platforms are a must for maximizing your target market. Be sure that you are using FREE social media platforms to let consumers know that YOU have a new SCW Chronic Disease Specialist Certification and you are for hire! The number of people with chronic diseases are increasing and qualified fitness professionals are in high demand.

- Facebook (35+ and baby boomers)
- Instagram (Millennials, under 55)
- Twitter (all ages)
- LinkedIn (mostly 35+ professionals)
- Snapchat (under 25, but growing in popularity with other age groups)
- Pinterest (25+)

Above and beyond social media platforms, are:

- Podcasts
- Blogs/Vlogs
- Webinars & Networks
- E-Newsletters
- ZOOM/Google Hangout/Meet-ups
- Workshops/Course Offerings

IX. Appendix
Anatomy / Physiology

With any fitness professional, a fundamental understanding of anatomy and kinesiology, which is the study of the principles of mechanics related to human movement, is important since an understanding of kinesiology will assist with ensuring Clients perform any exercises safely and effectively.

Anatomical Terminology

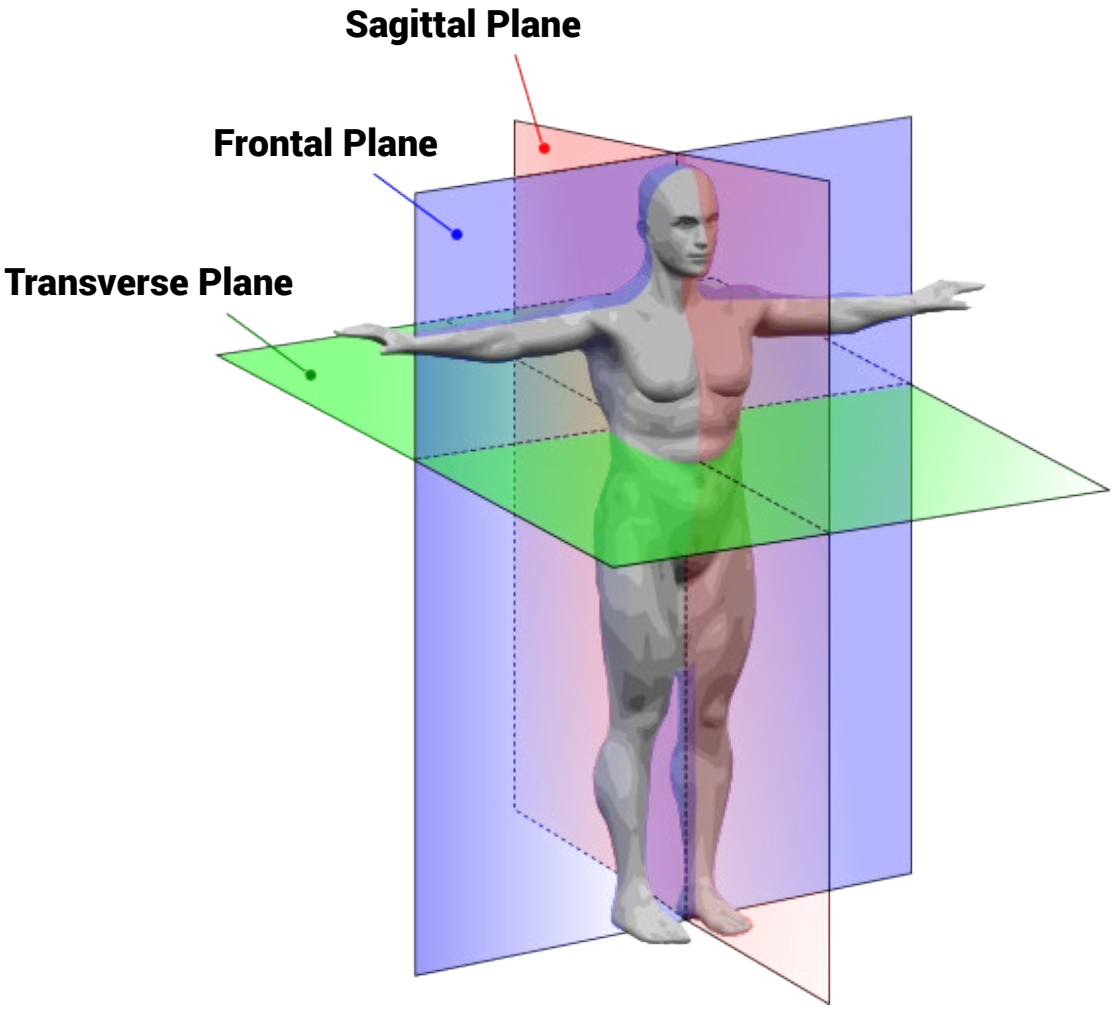
Term	Description
Anterior (ventral)	Toward the front
Posterior (dorsal)	Toward the back
Superior	Toward the head
Inferior	Away from the head
Medial	Toward the midline of the body
Lateral	Away from the midline of the body
Proximal	Toward the attached end of the limb, origin of the structure, or midline of the body
Distal	Away from the attached end of the limb, origin of the structure, or midline of the body
Plantar	The sole or bottom of the feet
Dorsal	The top surface of the feet and hands
Palmar	The anterior or ventral surface of the hands
Cervical (Spine)	Regional term referring to the neck
Thoracic (Spine)	Regional term referring to the portion of the body between the neck and the abdomen; also known as the chest (thorax)
Lumbar (Spine)	Regional term referring to the portion of the back between the abdomen and the pelvis
Sagittal Plane	An imaginary line that divides the body or any of its parts into right and left sections
Frontal Plane	An (imaginary line that divides the body into anterior and posterior parts; lies at a right angle to the sagittal plane)
Transverse Plane	Also known as the horizontal plane; an imaginary line that divides the body or any of its parts into superior and inferior sections

3 PLANES OF MOVEMENT

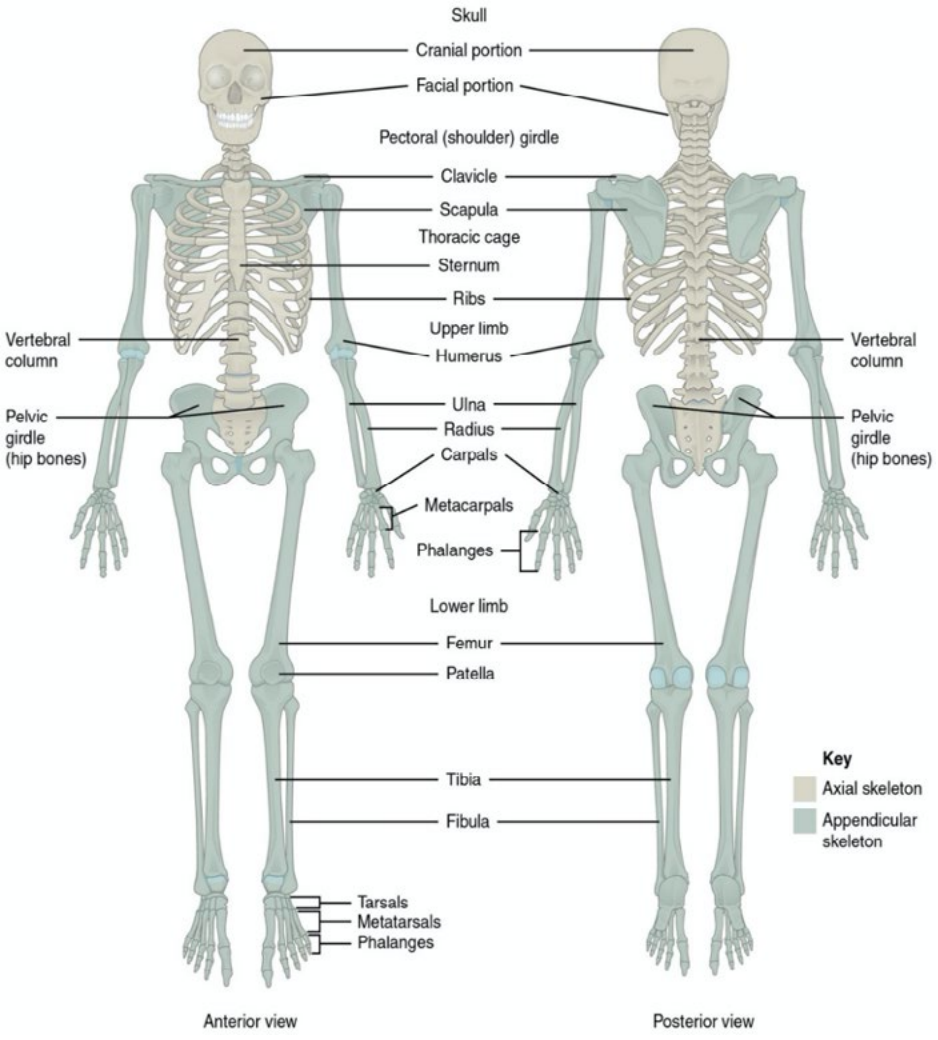
Exercise movements occur from positioning the body in a variety of possibilities, but all movement occurs in only three planes in space.

- **SAGITTAL PLANE**: space for moving forward and backward, pushing and pulling, often with FLEXION and EXTENSION
- **FRONTAL PLANE**: space for moving side to side (can be easily seen from the front) and often with abduction and adduction
- **TRANSVERSE PLANE**: space for moving across and around, sweeping or twisting across the body

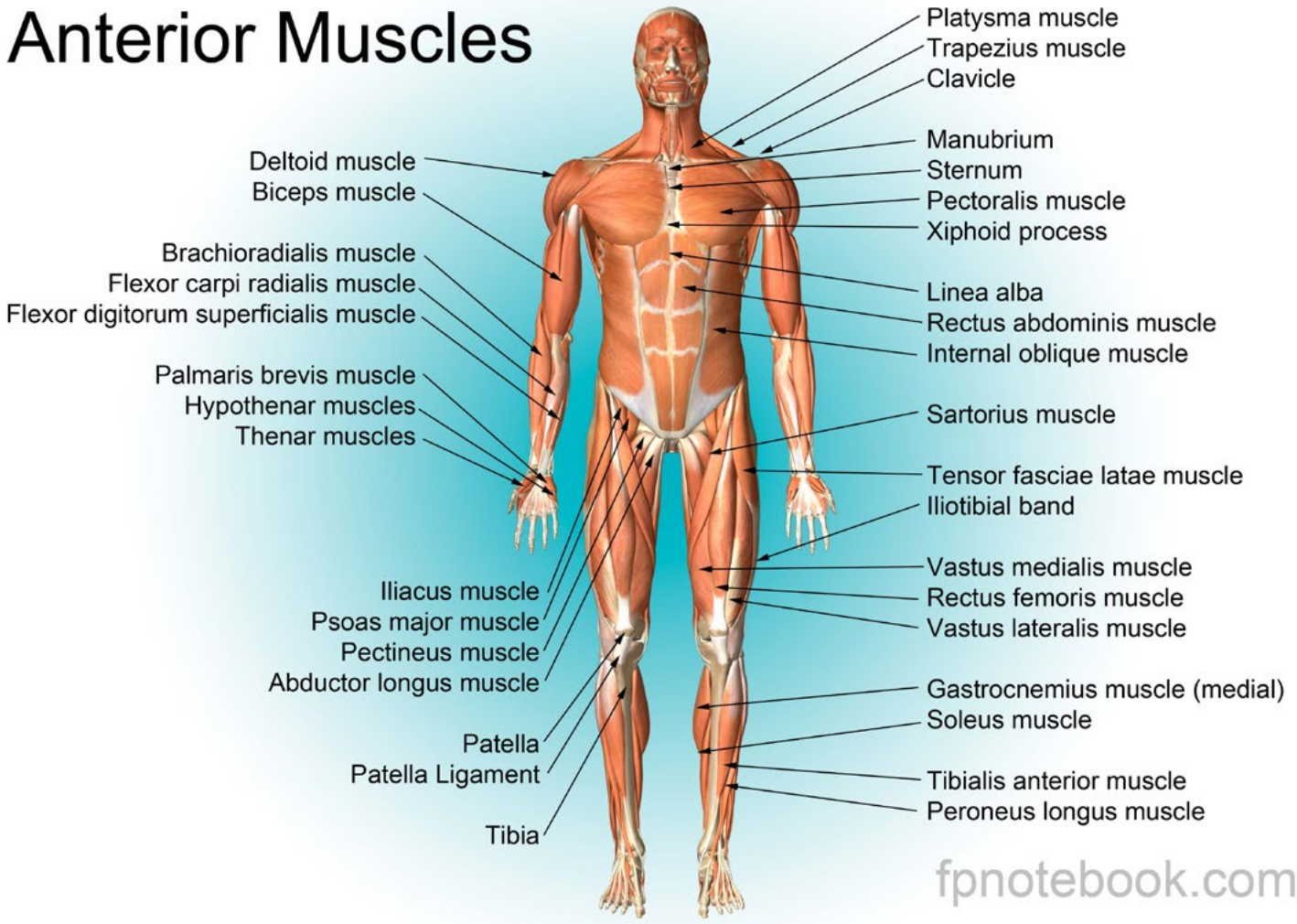
Instructors should note that spinal movement occurs in all the planes: sagittal, frontal, transverse planes, however, introduce spinal rotation slowly, particularly whenever longer levers are involved in the exercise.



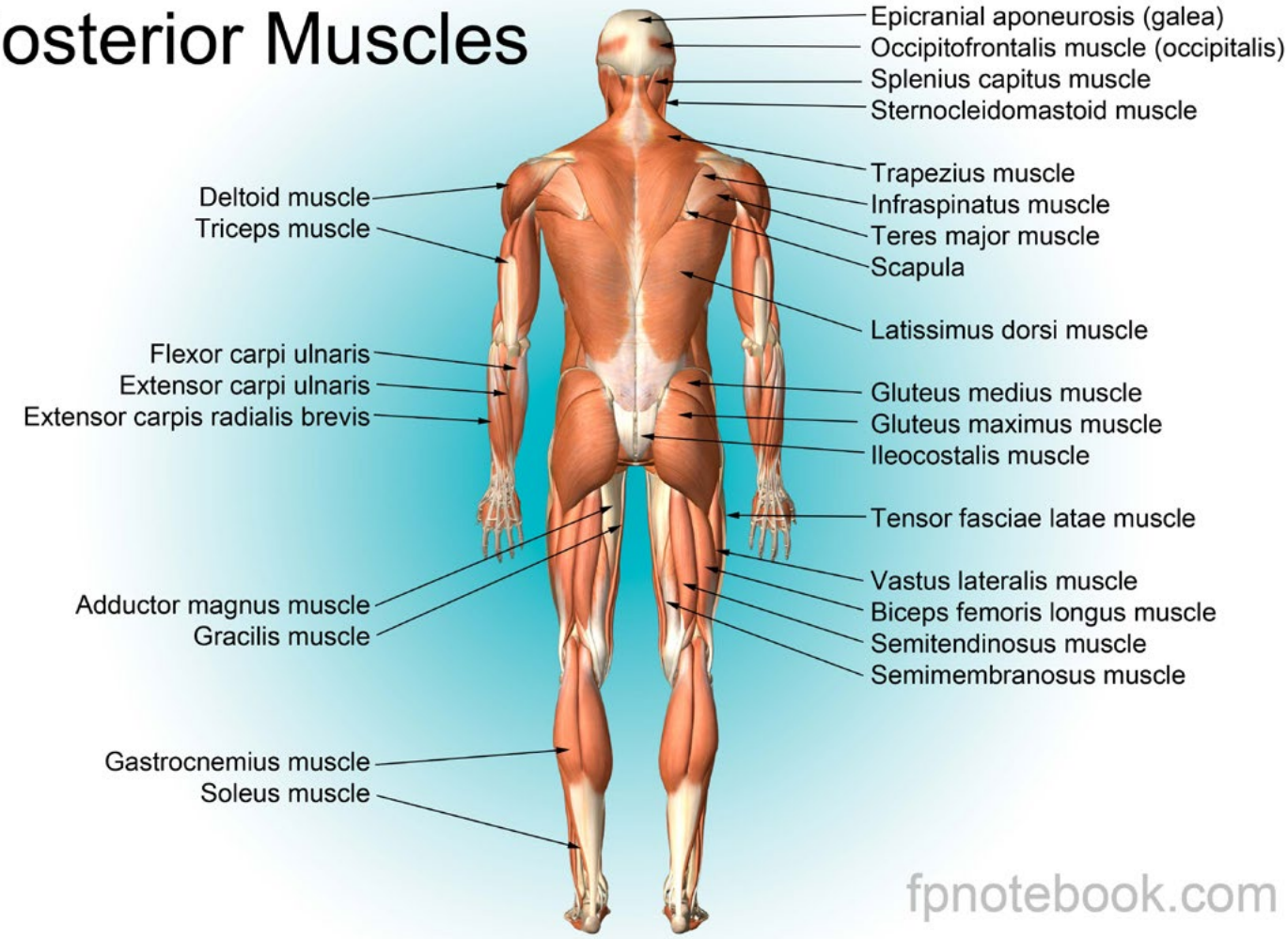
Skeletal Anatomy



Anterior Muscles



Posterior Muscles

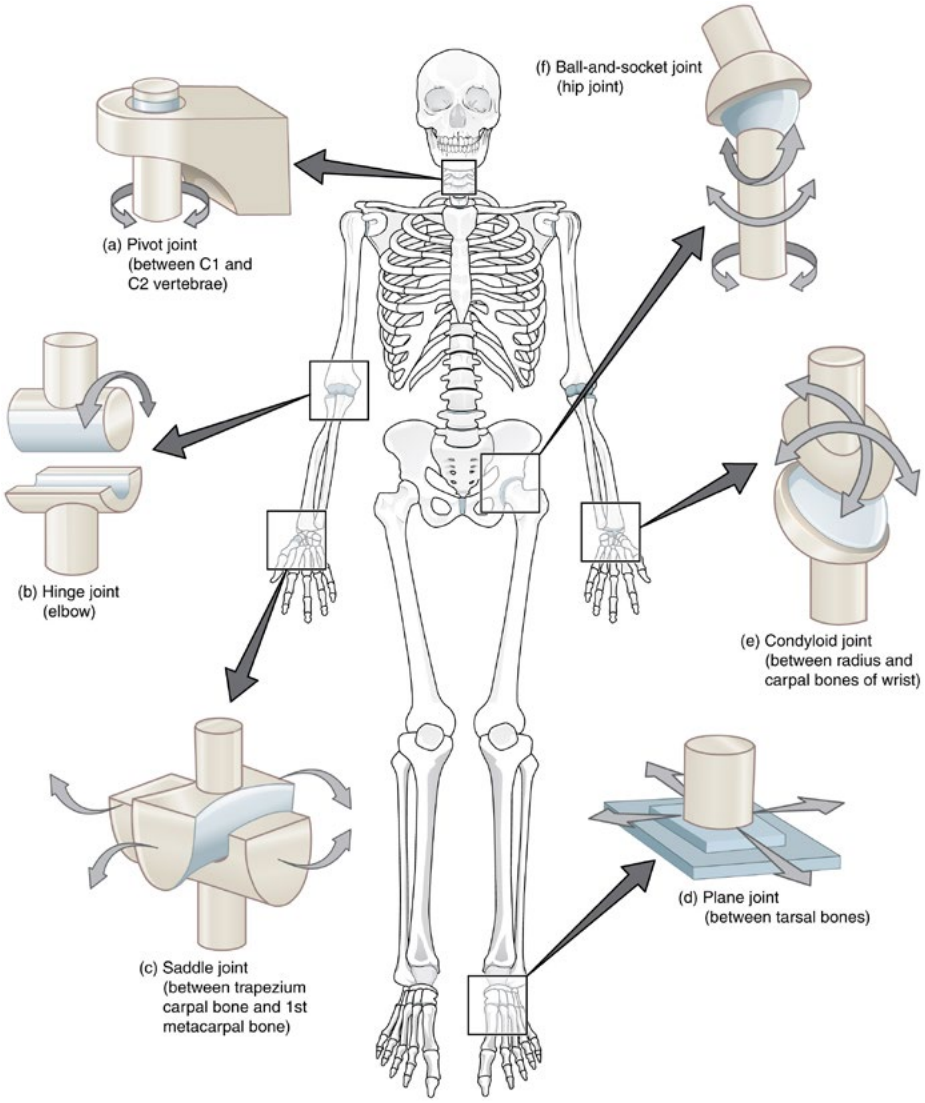


JOINTS OF THE BODY

The major joints are: ankles, knees, hips, elbows, shoulders, neck, and wrists. Additional cueing that might accompany joint alignment includes pelvic floor and transverse abdominus contraction.

Joint actions:

- Flexion-refers to the bending of a joint
- Extension-refers to straightening a joint
- Abduction-movement away from the midline of the body
- Adduction-movement towards the midline of the body
- Rotation-a circular movement (of a limb) around a fixed joint towards or away from the midline of the body



X. Appendix
Resources

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EXAM INSTRUCTIONS

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After you complete the course, you will be ready to take the exam. Please follow these simple instructions:

1. To take your exam click on the following link: https://www.scwfit.com/chronicdiseaseexam
2. After you click on the link above, you will be asked to create a log-in and password to access your exam, results, and certificate.
3. Keep your log-in and password in a safe place and do not lose it.
4. Begin your exam.
5. There is no time limit for the exam - you can even start and stop your exam with the ability to resume later. The exam will be available for 60 days after the date of your purchase.
6. You must obtain a score of 70% or greater to pass. You have two attempts to pass the exam.
7. Once you pass your exam, you can print your customized certificate by clicking on the certificate link on the bottom right-hand corner of the page.

Certification Renewal

Upon successful completion of your examination, you will be SCW certified for two years. To renew your certification, you must complete 20 continuing education credit hours. You can obtain CECs from a SCW Approved Provider. Please visit scwfit.com/scwproviders to view the list of approved providers. If you have obtained more than 20 credit hours, extra hours do not carry over into the next period. SCW recognizes other courses taken through all accredited colleges and universities. Academic courses relating to the field of fitness such as leadership, teaching skills, fitness management, nutrition, research, anatomy, physiology, exercise programming, and others can be applied towards your SCW Certification renewal.

There is a renewal fee for each SCW Certification. If you do not renew your certification before it expires, a late fee will be assessed. If your certification is not renewed within six months of expiration, you will need to take the course again.

Earn up to 8 CECs with each SCW Online Certification. www.scwfit.com/certifications To bring a Live SCW Certification to your facility, please visit www.scwfit.com/hostsite.

Earn up to 20 CECs in one weekend and offer CECs for SCW, ACE, AFAA, AEA, ACSM and NASM. www.scwfit.com/Events

SCW Fitness Education

www.scwfit.com | (847) 562-4020