

## MODULE 10

# FUNCTIONAL AGING TRAINING™ PROGRAM DESIGN



### Learning Objectives

1. Discuss how to create an exercise program using FATM principles and recommendations
2. Recall how to use the “art” of program design to resolve conflicts between established exercise guidelines and/or application of the 7 Key Principles
3. Describe how to manipulate frequency, volume and intensity to create an appropriate program for a mature client

### Introduction

Designing safe and effective exercise programs for as mature adults is a combination of science and art. The scientific evidence, such as that presented in this course, provides the foundation that is critical to taking an “evidence-based” approach. However, researchers cannot consider all of the personal characteristics and variables of each subject. This is where the art of exercise prescription becomes so important. There isn’t just one correct way to design an effective program but there are ways to make programs more effective by following the principles, concepts and processes of the Functional Aging Training Model. In this module we will provide some guidance on how to develop safe and effective exercise programs that consider some of the most critical individual variables of each client.

## **Reviewing the FATM**

When designing programs, it is first helpful to understand how powerful of a stimulus exercise is for older adults. Just getting someone to follow even the most basic program can yield significant benefits if they were previously sedentary. Getting more people to meet the minimal activity recommendations could reduce the prevalence of chronic disease, improve quality of life for many and increase the population's lifespan. However, these basic recommendations do not always maximize an individual's functional abilities and are oftentimes insufficient in helping a person reach their goals. Therefore, it is up to you to develop the program that you believe is going to be the most effective for the individual standing in front of you.

Designing effective exercise programs for older adults is both an art and a science and can be a difficult task. The body of science is large and constantly changing and it takes years of experience with hundreds of clients to really hone your program design skills. Drawing from the research and published exercise guidelines is a critical first step but these may be applied in a wide variety of ways in order to create programs that are maximally safe and maximally effective given the specific abilities, limitations, needs and goals of each client.

You must also balance what you feel is optimal versus what the client is willing to do. You can create the most innovative and groundbreaking exercise program in the world but if no one is willing to do it then it is impractical. Likewise, you may feel that your client needs to exercise 5 days a week for 60 minutes a session and yet they are only willing to work out 2 days per week for 30 minutes a session. You must work within these real world constraints to create an effective program for them.

Sometimes the published recommendations are in direct conflict with one another which leaves you to make some difficult choices. Let's imagine, for example, that you have a client with osteoporosis. The guidelines for someone with osteoporosis recommend weight bearing activity (especially jumping activities) and high-load resistance training. However, this client also has advanced osteoarthritis in both knees. The guidelines for someone with osteoarthritis recommend non-weight bearing activity (such as biking and aquatics) and low load, high repetition resistance training while avoiding most high-impact activities (such as jumping). The guidelines for the management of these two conditions are in opposition to one another. It is up to you to resolve this dilemma and come up with a program that, optimally, improves their functional abilities while simultaneously improving bone density and being easy on their joints.

Situations like these are common. Mature adults tend to be more complicated to design programs for because there are so many physical variables that need to be dealt with. Many fitness professionals either shy away from these clients because they are too "difficult" to design programs for (thus missing a huge opportunity), completely ignore their specific needs (thus increasing the risk of injury), or baby them because they are afraid of injuring them (thus ensuring an ineffective program). None of these responses are appropriate. It is possible to create safe and effective exercise programs that take the individuals' needs into account without having to spend hours of work.... if you have a system to work with. The Functional Aging Training™ model is that system.

The entire model, including the Hierarchy of Functional Aging, the 6 Domains of Function and the 7 Key Principles, encompass most of what you need to know about designing functional exercise programs. Now it is just a matter of putting those pieces together into a cohesive and meaningful whole. As was stated earlier, exercise program design is both art and science so the

Functional Aging Training™ model is not a fixed program. Rather it provides a philosophy of training (we all have a philosophy of training whether or not we have formally voiced it to anyone including ourselves) and a framework for making effective decisions about training. But these “rules” must sometimes be broken (hence the art of program design).

For example, let’s consider Key Principle #4 which states that isolation-type exercises should not be the primary component of a routine. When would we want to break this “rule”? Consider a frail client who has difficulties with Activities of Daily Living and has become more and more dependent on others for her needs over the past couple of years. She has come to you because she wants to regain her independence. Upon testing this client it is found that she cannot stand up out of a chair without the use of her arms due to a significant lower-body strength deficit. She is not overweight and would actually be considered underweight with a BMI of 17. During her health interview it is also discovered that she is osteopenic (her bone density is lower than it should be but not low enough to be categorized as osteoporosis).

If we follow Key Principle #4 to the letter then we would be doing this client a disservice. This client needs to build muscle mass, strength and power while improving bone density if she is to regain her independence. Therefore, putting her on a traditional high-load progressive resistance training program using selectorized or plate-loaded machines for 3-4 months would be appropriate. This means that she would perform primarily seated, isolated exercises such as the leg press, leg extension, leg curl, hip adduction, hip abduction, seated rows, chest press, shoulder raises, etc....all exercises that we would typically avoid or only use selectively in a functional exercise program.

However, it would be wise if she also performed some exercises to improve gait, mobility, agility, balance, etc as she is able. This could be accomplished in many different ways depending on her

availability, energy level and other factors. Several programming options that incorporate traditional and functional workouts have been described below:

- PRT (3x10) on MWF and functional exercises on Tu, TH.
- PRT on MF and functional exercises on Wed
- 10-15 minutes of functional exercises followed by PRT on MWF
- Functional exercises on MWF; PRT on Tu, TH
- Split PRT (M/TH; Tu/F) with each session preceded by 10-15 min of functional exercises

You may naturally feel like one of these choices is better than the others or, conversely, like one of these choices is not appropriate. However, you really cannot make that decision without knowing more about the client. None of these choices is inherently better than the others and reiterates how the science of exercise must be artfully applied to an individual client.

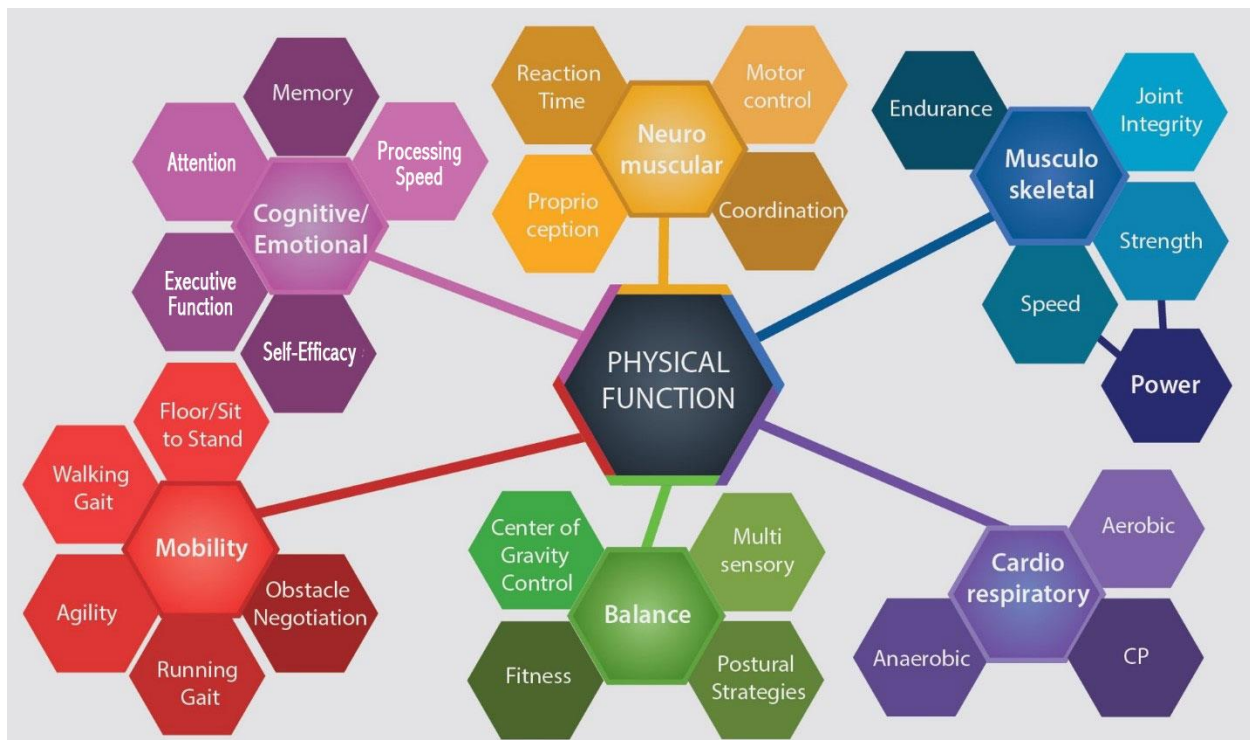
### **The Program Design Process**

Everything that has been covered up to now should provide you with all of the tools necessary to create safe and effective programs for a wide variety of older clients. However, let's review the FATM process:

1. Perform a thorough screening and assessment of the client's health, functional abilities and goals
2. Categorize the client functionally using the Hierarchy of Functional Aging
3. Identify and prioritize their impairments according to the 6 Domains of Function
4. Design a program based on their needs, abilities, goals and contextual factors (availability, schedule, etc.) that focuses on the highest priority impairments but strives to address all domains
5. Implement the program providing ongoing quantitative and qualitative assessment
6. Continually revise the program providing appropriate regressions and progressions as needed

Ideally, designing an exercise program begins with a comprehensive assessment of the client's health and physical abilities. A variety of functional assessments have been described earlier.

Testing provides critical information regarding the client's areas of strength and weakness. It is inaccurate to say that the trainer "diagnoses" the client's problems since it is outside the scope of personal training to diagnose a disease or condition. Rather, let's say that the trainer must identify areas of deficiency that need to be addressed in order to improve physical functioning. A prudent selection of assessments will reveal these areas and provide a baseline for gauging improvement. Again, we must refer back to the areas of physical function to make sure we are conducting the assessments that reveal the client's individual needs (see image below).



Once the areas with the most significant deficit have been identified then these areas can be prioritized in the training program. It is important that the program address as many of the functional components as is practical but the areas of deficiency must be given the most time and attention while areas of strength can be given lesser attention. As noted earlier, exercise is a powerful stimulus and even a "one size fits all", "off the shelf" or "cookie cutter" program can

provide benefit but an individually tailored program will be more effective. Keep the areas of priority at the center of your training. As the training program progresses continual re-assessment is necessary because areas of deficiency will improve therefore changing the functional components that need to be prioritized.

Unfortunately, not all environments or situations lend themselves to individual assessment. Large group training programs, retirement villages, community centers and outreach programs often lack the necessary resources (time, money, facilities, equipment, etc.) to do so. In these cases, categorizing an individual according to the Hierarchy of Functional Aging and performing ongoing subjective, qualitative assessment is necessary. Basically, the trainer or exercise leader should observe the client performing a variety of exercise movements and determine which types of challenges they struggle with the most. In some environments the exercise leader is able to observe the client in everyday situations such as walking, stair climbing and performing chores. This kind of observation yields valuable information about the person's functional abilities and, more specifically, areas that they struggle with.

In an exercise class, for example, an individual may be able to perform chair stands without too much difficulty but struggle with heel to toe walking. This suggests that their lower body strength may be sufficient but their balance needs to be addressed. During daily activities you might observe that the individual gets up from a seated position easily and without the use of their arms but they keep their feet wide when walking and tend to place their hand on nearby furniture or walls when moving about. This also suggests adequate lower body strength but poor balance. It would be best to actually quantitatively assess these areas through functional testing but, if that is not a possibility, qualitative assessment is the next best thing. Quantitative and qualitative assessment will be discussed in more detail later on.

## **Building a Program**

In a traditional exercise program there are three basic areas that are addressed: cardiovascular endurance, muscular strength and flexibility. A functional exercise program considers many more variables (refer to list of functional components). This can appear confusing at first but once the functional assessments have revealed areas that need to be prioritized then these “big rocks” can be addressed first and the rest of the program will fall into place.

Training recommendations and ideas for each of the 6 functional domains have already been described but let’s take a look at the important characteristics of frequency, intensity and volume and how they apply to functional exercise program design for older adults. The information below is intended to provide a broad perspective of functional training and uses some specific examples for different types of exercises but it does not cover every domain specifically.

Frequency: The research literature suggests that, for mature adults, twice weekly progressive resistance training is just as effective, or even more effective, than thrice weekly training. It has been proposed that mature adults need more recovery time than younger adults when it comes to building muscle mass and strength. Even training only one time per week can yield significant results for weak and deconditioned adults but the results are more limited. Once-weekly exercise sessions have also found to be effective at maintaining results in older adults. A study (Foley et al. 2010) in the British Journal of Sports Medicine found no difference among most of the outcomes measured in older adults (after discharge from day rehabilitation) whether they performed gym-based exercises either once or twice per week for 3 months. So based on this evidence exercising one time per week may be useful in specific situations but in general performing PRT 2-3 times per week is recommended.

Most functional exercise programs evaluated in the research literature have followed a similar frequency. For example, Ritchie et al. (2012) compared the efficacy of the FallProof™ Balance Program delivered either two or three times per week. They found that exercising two times per week was just as effective at improving balance as exercising three times per week. A 2011 meta-analysis of balance exercise by Sherrington et al. suggests that at least 2 hours of balance training per week is needed to significantly reduce fall prevalence. However, the authors also indicate that there is no clear cut-off and that some experts have suggested that there are greater benefits from higher doses of exercise.

One of the primary difficulties in interpreting the functional exercise literature is that the programs vary considerably in their exercise variables (exercise selection, sets, reps, frequency, subjects, etc.) so it is difficult to determine the threshold (minimum amount) of exercise that is needed to improve function. While it is likely that the different functional components have different thresholds the evidence isn't clear at this point. Therefore, we operate under the assumption that 2-3 times per week is sufficient to improve most impairments but more may be required for others – such as cardiovascular endurance and flexibility. Therefore, most exercise programs should (ideally) include 5-6 days of exercise if that is feasible for the client. Cardio, balance and mobility/flexibility exercises can be performed daily while resistance exercises (including strength and power) should be limited to 2-3 days per week in order to provide 48-72 hours of rest between sessions (for a given muscle group).

Volume: Related to exercise frequency is the volume of exercise. Traditional strength training is based on a system of sets and repetitions. Most functional exercise programs in the research literature have followed the same model. Typically, researchers use 2-3 sets of 10-15 repetitions of each movement. Isometric exercises, such as planks or bird dogs, vary more widely in how

they are performed. For example, back expert Stuart McGill, PhD recommends performing planks in sets of descending repetitions (5, 4, 3, 2 and 1) and holding each plank for 10-12 seconds with 5-10 seconds of rest between each plank.

However, form fatigue is an important variable to consider with many functional movements. Movement accuracy and form should be maintained throughout the movement and when it begins to break down then the exercise should soon be discontinued. Unlike traditional strength exercises it can be counter-productive and even potentially dangerous to “push through it” and force out more repetitions if proper form isn’t being followed. A person may trip, lose their balance, allow too much spinal movement or aggravate an arthritic joint if they perform movements with improper form. Depending on the movement (complexity, resistance, etc.) form may begin to break down with just a few repetitions or may break down after 20+ repetitions. The key is to monitor the client while they perform the exercise so you can let them know when their form is breaking down. Teaching them how to recognize their own form breakdowns and then correct them can also be incredibly helpful.

This doesn’t mean that each movement needs to be performed with 100% accuracy because this is very unlikely to happen. Remember the 90% Rule from Module 8 – clients should be able to maintain about 90% accuracy with their movements throughout an entire set. The volume (sets, reps and time) of any particular exercise, therefore, may be limited by form fatigue which is also dependent on other factors such as the load being used and the complexity of the movement. Similar to a typical periodized training model, volume should be higher when intensity is lower and vice versa.

For new exercisers it is wise to follow the traditional progression approach of starting with a lower intensity and lower volume and then increasing the volume before increasing intensity. This will

facilitate an easier transition for the client; increase their self-efficacy; decrease their apprehension; build their confidence; help them get into a regular routine; give them time to master basic movement skills; and hopefully prevent muscle soreness and joint aggravation.

Intensity: Mature adults, as a whole, do not need to “take it easy” or only use light weights. In fact, if they do they are likely to realize little, if any, significant results. Physiologically they must be overloaded in order to stimulate improvements just like everyone else. One of the groundbreaking studies that was published in the early 1990’s used heavy resistance training with 80- and 90-year old’s in a nursing home. At the time many people believed that this type of training would injure or even kill older adults. The study found that not only did the subjects tolerate the heavy resistance training without serious incident but they significantly increased their muscle mass and strength as a result.

All too often, however, health and fitness professionals buy in to the “take it easy” philosophy. This is most likely because they neither understand nor have experience with this population. For others they lack appropriate knowledge regarding common disease conditions such as cardiovascular disease, hypertension and diabetes and therefore choose to “play it safe” with their clients. In addition, many mature adults don’t know how hard to exercise either. Those that have been sedentary for most of their lives have not had much experience exerting themselves and are often also scared to do so. Many have also bought into the stereotype that they are supposed to slow down, take it easy and gradually fade into the sunset of their lives.

It is the job of the fitness professional to establish an appropriate level of exercise intensity that is effective yet safe for the client. Effective means that the intensity of the exercise is sufficient to create a physiologic overload in order to stimulate improvement. This will vary widely depending

on the client's level of health and fitness. For specific information on establishing an appropriate cardiovascular exercise intensity please refer to Module 3.

Resistance exercise intensity is typically set as either a percentage of one-repetition maximum (or predicted) strength or by the number of repetitions a person is required to perform. This is because the primary outcome is muscle strength. Functional exercise movements by their nature focus on challenging and improving many more variables than just strength. Therefore, intensity is typically determined by the number of repetitions that can be performed with proper form or, ideally, based on the results of a comprehensive functional assessment.

As will be discussed elsewhere, exercise intensity can be manipulated by altering load, speed, complexity, pace, rest periods, range of motion, and many other variables. Choosing which of these variables to manipulate will depend on the client and the specific functional outcomes that are desired. These variables must be chosen judiciously so that we don't try to just make movements "harder" to perform. The term "harder" is too broad and non-specific. Anyone can make a movement more difficult to perform but for what purpose? Instead of just making it harder an effective trainer will identify which functional domain they want to challenge/overload and adjust the appropriate variables in order to do so.

For example, a standing DB biceps curl can be made "harder" by having the client stand on one leg on a BOSU ball at the same time. But what is the purpose of doing it this way? It will create a difficult balance challenge but will inhibit the client's ability to perform the biceps curls as they will likely need to focus most of their attention on not falling and instability decreases the ability to produce force. It would be better, in this case, to increase the weight of the DB's while standing on two feet on solid ground and then perform the balance exercise separately.

## **What about Chronic Conditions?**

Chronic conditions can impact the exercise program depending on their severity but, as discussed previously, they typically play more of a secondary role in the FATM process. The goal is to create a functionally effective program based on their impairments and goals first and then consider how the movements and strategies need to be altered based on their chronic conditions. For example, you may determine that a client needs to perform squats in order to improve their lower body strength and power deficit. However, they have significant knee osteoarthritis. Their osteoarthritis doesn't change the fact that they need to perform squats although it might change how they perform them such as using lighter loads or reduced range of motion or a resistance loop around their knees (to help provide stability and facilitate proper form). The same can be said about many musculoskeletal conditions.

However, there are times when the condition itself is so severe or advanced that it becomes the primary target such as in the later stages of Parkinson's disease or advanced cardiovascular disease. In these situations, it is best to reverse the process and follow the specific exercise guidelines and recommendations for that condition first while simultaneously trying to be as "functional" as possible.

## **Continual Revision**

There isn't an optimal program that can be followed statically over a long period of time. Programs must continually be revised in order to remain effective and this is especially applicable when working with older adults. There are many reasons for this including:

- Older adults tend to display more variability in performance from day to day and week to week depending on many factors such as illness, medication changes, disease progression/regression, outside activities, injuries, etc.

- Older adults, like any other population, have different likes and dislikes when it comes to exercise
- As the impairment-level factors that have been prioritized improve the program will need to shift in order to focus on other factors
- Following the principle of progressive overload, new challenges must be provided in order for the client to continue to make progress

The most effective way to know when and how to make changes to the program is to continually re-assess. This can, and should, be done both qualitatively and quantitatively. Qualitative assessment requires the trainer to diligently monitor the client's movement capabilities and elicit their feedback. This type of assessment should occur continuously throughout each session so that changes can occur immediately. This is also why performing a brief check-in with each client prior to their exercise session is important. If they are experiencing any signs and symptoms; muscle soreness; joint pain/discomfort; or having any other issues then the trainer should be aware of them before the session in order to make the appropriate changes to the exercise session.

Quantitative assessment is more formal and should be performed periodically. It is typically used to gauge progress or to further evaluate possible impairments. The frequency of these assessments can vary widely but many recommend doing them every 3-6 months. However, every exercise the client performs is, in essence, an assessment that can provide valuable information for programming. For example, the trainer may notice that a client has great difficulty performing any exercise on one leg or gets very confused during coordinative movements. These are indications that the client has deficits that need to be addressed.

### **Learn By Doing**

The only way to become more comfortable and effective at designing programs is to work with a large number and variety of clients as possible. While you may want to focus predominantly on

one group, such as fit, healthy adults, you will significantly more by working with some adults of all levels on the Hierarchy of Functional Aging and with a wide range of chronic conditions.

The sample chart below can be used (and customized) in several different ways to help you gain the necessary breadth of experience in order to hone your program design skills. You could track how many clients you have worked with in each of the categories (add any categories you feel are important to you). Categories with “0-2” would be ones you need a lot more experience with and you should seek opportunities to work with these types of clients. You could also use it more generically by stating how much experience you have within each category – none, minimal, moderate, extensive. Finally, you could use it to self-reflect on your own confidence level in working with each of these types of clients. Some trainers are really hesitant to work with adults that have had heart attacks, for example. It scares them to think that they might cause them to have another heart attack. If any of these, or other, types of clients scare you or make you feel uncomfortable then seek out a program or mentor to help you gain more experience and confidence. This chart is just an example so list any conditions or criteria that are important to you.

|                       | <b>Healthy</b> | <b>Osteoarthritis</b> | <b>Heart<br/>Disease</b> | <b>Knee/Hip<br/>Replacement</b> | <b>Osteoporosis</b> | <b>Fall Risk</b> |
|-----------------------|----------------|-----------------------|--------------------------|---------------------------------|---------------------|------------------|
| <b>Frail</b>          |                |                       |                          |                                 |                     |                  |
| <b>Pre-<br/>Frail</b> |                |                       |                          |                                 |                     |                  |
| <b>Lower<br/>Ind</b>  |                |                       |                          |                                 |                     |                  |

|                       |  |  |  |  |  |  |
|-----------------------|--|--|--|--|--|--|
| <b>Higher<br/>Ind</b> |  |  |  |  |  |  |
| <b>Semi-<br/>Fit</b>  |  |  |  |  |  |  |
| <b>Fully<br/>Fit</b>  |  |  |  |  |  |  |
| <b>Elite</b>          |  |  |  |  |  |  |

Even if you have access to a fitness facility you may need to think outside the usual fitness setting while you are trying to get experience. You could work or volunteer at a retirement or care home of some sort, a community center, a church program, medical center or even seek out family members and friends. This is especially important when just starting out. You may have a grandparent, aunt/uncle, cousin, neighbor or close family friend that would benefit from exercising regularly and would be open to you training them for a short time.

Working through different scenarios is also a good way to become better at developing programs. Below are a few case studies to help you to start thinking through the decisions you have to make when designing a program. It is best to do these as if you were doing them for a real client although it is more difficult to develop a program for someone you haven't personally talked to, tested and seen. If there is additional information that you wish to know about these pretend clients then simply make it up yourself. That way you won't be stuck.

## Case Study: Robert

Background: Robert is a 67-year-old who has worked as a financial accountant his entire career. He is married with several adult children and grandchildren that live in the area.

Height: 6'2"      Weight: 170 lbs

### Health Conditions:

- Bilateral Knee Osteoarthritis – mild discomfort/achiness climbing stairs
- Hypertension – well managed on medication (124/82 at rest)
- Visual – wears contacts

### Functional Testing Scores:

- Senior Fitness Test Battery (score and percentile rankings)
  - 30 sec Chair Stand      18; 70%
  - 8' Up and Go      4.3 sec; 70%
  - 2-Minute Step Test      125; 85%
  - 30 sec Arm Curl      20; 60%
  - Chair Sit and Reach      2.5 in; 75%
  - Back Scratch Test      0 in; 80%
- mCTSIB – cleared all 4 conditions

### Goals:

- Starting to “feel his age” and doesn’t like it
- Wants to be healthy and more active
- His grandchildren are his motivation to get in better shape
- Likes to travel and wants to continue to be able to do it for a long time
- Stomach has gotten bigger over the past few years and he would like to “slim down” some

### Activity History:

- Walks outside on a fairly regular basis with his wife (nothing strenuous)
- Has never considered himself to be athletic so he doesn’t play sports but he enjoys playing golf once a week with his friends
- He likes to read and his work as an accountant is very sedentary

- He has had several gym memberships over the decades but never really went regularly and doesn't really like working out anyway

Questions to get you started:

1. How would you classify his current functional level according to the Hierarchy of Functional Aging?
2. What are his most glaring deficits (if any)?
3. How would you summarize his goals?
4. Does he have any conditions that would significantly alter the exercise prescription?
5. What does his current and past activity history tell you about how to get him started?
6. Are there additional tests you would like to perform? If so, which ones?

**Task:** Create an initial exercise program for Robert assuming that he is willing to devote 60 min/day for 5 days/week to a routine and that you have access to a fully-equipped fitness facility. State specific exercises (movements, equipment, body position, sets and reps/time, order), loading/resistance level (low, medium, heavy), rest periods and any other pertinent information for each day of training.

## Case Study: Julia

Background: Julie is a 79-year-old female, retired high school teacher whose husband passed away 4 years ago. She lives in a 2-story house by herself and would like to remain in her home for as long as possible. Julia has an active social life with lots of friends but her two adult children and grandchildren live far away.

Height: 5'5"      Weight: 110 lbs

### Health Conditions:

- Bilateral Knee Osteoarthritis – mild discomfort/achiness climbing stairs
- Fall History – Has fallen multiple times at home in the past year without major injuries but 2 yrs ago she fell and broke her wrist
- Osteopenia – diagnosed a year ago (on medication for it)
- Uses a cane when she goes places but doesn't really use it when she is at home or working in her yard

### Functional Testing Scores:

- Senior Fitness Test Battery (score and percentile rankings)
  - 30 sec Chair Stand      8; 10%
  - 8' Up and Go      7.8 sec; 20%
  - 2-Minute Step Test      100; 75%
  - 30 sec Arm Curl      15; 50%
  - Chair Sit and Reach      3 in; 70%
  - Back Scratch Test      -1 in; 60%
- mCTSIB – failed to complete condition 4 (eyes closed/unstable surface)

### Goals:

- Wants to feel more confident doing chores around her house and yard because she is afraid she is going to fall and break her hip or hit her head
- She wants to have more energy
- She feels weak and is struggling to keep up with her chores on her own (her daughter comes over several times a week to help her change bed linens)
- Her son has put up extra handles in the bathroom and other areas but she hates that she has to use them
- When she has fallen she has struggled to get up by herself so she would like to be able to get up independently if she ever does fall again

- She wants to keep living independently in her home and doesn't want to move to a retirement community or assisted living facility

#### Activity History:

- Tries to stay active doing housework and yard work
- She is very socially engaged and volunteers at her church by working in the food pantry a couple of days a week
- Goes to her grandchildren's sporting events regularly (although climbing bleachers requires some help)
- She cooks a lot of the holiday meals when her children and grandchildren come over
- She hasn't formally exercised since college

#### Questions to get you started:

1. How would you classify her current functional level according to the Hierarchy of Functional Aging?
2. What are her most glaring deficits (if any)?
3. How would you summarize her goals?
4. Does she have any conditions that would significantly alter the exercise prescription?
5. What does her current and past activity history tell you about how to get her started?
6. Are there additional tests you would like to perform? If so, which ones?

**Task:** Create an initial exercise program for Julia assuming that she is willing to devote 30-45 min/day for 4 days/week to a routine and that you have access to a fully-equipped fitness facility. State specific exercises (movements, equipment, body position, sets and reps/time, order), loading/resistance level (low, medium, heavy), rest periods and any other pertinent information for each day of training.

## Case Study: Susan

Background: Susan is a 61-year-old female who works full-time as a nurse. She is married with several adult children and is expecting her first grandchild soon. Susan has been doing yoga several days a week and walking regularly for the past 5-6 years.

Height: 5'8"      Weight: 145 lbs

Health Conditions:

- None

Functional Testing Scores:

- Senior Fitness Test Battery (score and percentile rankings)
  - 30 sec Chair Stand      17; 75%
  - 8' Up and Go      3.5; 90+%
  - 2-Minute Step Test      124; 90%
  - 30 sec Arm Curl      21; 85%
  - Chair Sit and Reach      8 in; 90+%
  - Back Scratch Test      4 in; 90+%
- mCTSIB – passed all conditions

Goals:

- Wants to lose some weight and “tone up”
- She feels like she is not as strong as she used to be
- She knows she needs to be doing some strength training but she doesn't really know what to do or how much

Activity History:

- Yoga class 2-3 times per week that meets at her workplace (hospital)
- Walks with her husband for about 45-60 minutes on weekends and once or twice during the week for about 30 minutes
- Enjoys the outdoors and likes to hike although she only gets to do it occasionally

Questions to get you started:

1. How would you classify her current functional level according to the Hierarchy of Functional Aging?
2. What are her most glaring deficits (if any)?
3. How would you summarize her goals?
4. Does she have any conditions that would significantly alter the exercise prescription?
5. What does her current and past activity history tell you about how to get her started?
6. Are there additional tests that you would like to perform? If so, which ones?

**Task:** Create an initial exercise program for Susan assuming that she is willing to devote 45-60 min/day for 2 days/week to a routine and that you have access to a fully-equipped fitness facility. She wants to keep doing her yoga 2-3 times per week and walking on the weekends. State specific exercises (movements, equipment, body position, sets and reps/time, order), loading/resistance level (low, medium, heavy), rest periods and any other pertinent information for each day of training.