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Introduction

Why develop a toolkit on physical activity (PA) for Registered Dietitians Nutritionists (RDNs) aimed at providing PA guidance to patients/clients?

• How does providing PA guidance relate to an RDN’s individual scope of practice?
• How can being knowledgeable about PA, competent in providing PA guidance, and incorporating PA recommendations into a practice, help patients/clients reach their nutrition and health goals?
• How can providing PA guidance to patients/clients enhance the quality of your nutrition and dietetic practice?

This toolkit will address each of these questions. The toolkit is designed as a first step in helping RDNs talk with patients/clients about PA and in assisting RDNs to incorporate guidance about this key lifestyle component into their practice. A complete list of acronyms and definitions are provided in Appendix 1. RDNs need to understand how PA, and its integration with nutrition, improves the health and well-being of patients and clients. Listed below are key reasons for learning about PA:

• Nutrition and PA play key roles in the prevention and treatment of chronic disease and obesity. Over ten years ago, the 2009 Position of the Academy of Nutrition and Dietetics (The Academy): Weight Management stated, “RDs must remain current on topics related to the treatment and management of patients with obesity, including the knowledge and skills that are required to counsel patients about physical activity” (Seagle HM, 2009). Since this Position Statement was published, every Academy Position Statement addressing the prevention and treatment of obesity/overweight and chronic disease for children and adults has addressed the need for RDNs to recommend PA to their patients/clients, including the 2016 updated Position of the Academy of Nutrition and Dietetics: Interventions for the Treatment of Overweight and
Obesity in Adults. (Charuhas MP, 2017; Hoelscher DM, 2013; Powers et al., 2016; Raynor HA, 2016; Robinson GE, 2018). Position Statements addressing healthy diet and lifestyle across the lifespan (Ogata, 2013; Procter SB, 2014; Thomas, 2016) also emphasize PA and how to eat to meet energy needs. Finally, The Academy’s revised 2017 Standards of Practice in Nutrition Care and Standards of Professional Performance for Registered Dietitian Nutritionists (Committee., 2018d) clearly states that RDNs need to know how to assess PA. Thus, the evidence is clear. It is important for RDNs to understand the role of PA in meeting the needs of patients/clients to maintain their position as key players in the health care team.

- Patients/clients are asking about PA and how being physically active can help manage their medical conditions and body weight, and maintain overall good health. Being competent in responding to their questions and knowing how to refer patients/clients to the appropriate certified exercise professionals, whose certification is accredited by the National Commission for Certifying Agencies ((NCCA)) will enhance the RDN’s ability to help patients/clients reach their goals.
- The Academy encourages RDNs to promote PA as a part of a healthy lifestyle. RDNs who are knowledgeable about PA, and who are competent in providing PA guidance as part of their practice, will have enhanced lifestyle management skills that increase their value to the health care team and to their patients/clients.

Target Audience

According to the Academy, all registered dietitians are nutritionists, but not all nutritionists are registered dietitians. The Academy’s Board of Directors and Commission on Dietetic Registration have determined that those who hold the credential Registered Dietitian (RD) may optionally use “Registered Dietitian Nutritionist” (RDN) instead. The two credentials have identical meanings. In this Exercise is Medicine Toolkit will use the term RDN to refer to both registered dietitians and registered dietitian nutritionists.

This toolkit is designed for RDNs who want to talk with their patients/clients about achieving the recommended levels of PA and developing healthy lifestyles that include sound nutrition practices and appropriate PA. The toolkit is focused toward the adult patient/client and will assist RDNs in determining how providing PA guidance to patients/clients may fit within their individual scope of practice. RDNs, regardless of skill level and work setting, will benefit from the information provided within this toolkit.

Purpose

The Purpose of the Physical Activity Toolkit for RDNs is Two-Fold:

- To assist RDNs working in diverse settings (e.g. inpatient and outpatient clinical settings, private practice, etc.) to routinely provide safe and effective PA guidance/education to their patients/clients based on the recommendations provided in the 2018 Physical Activity Guidelines for Americans (Agriculture; U.S. Department of Health and Human Services, 2018a).
- To demonstrate how to effectively refer patients/clients to certified exercise professionals when a personalized fitness assessment and exercise prescription and/or supervised activity is requested or recommended by the patient’s/client’s physician/primary care provider.
Physical Activity Toolkit for RDNs: Utilizing Two Key Resources

This toolkit introduces and utilizes two key resources to help RDNs learn more about PA and begin to incorporate PA recommendations into their practice. These two resources are briefly described below.

The 2018 Physical Activity Guidelines for Americans, United States (US) Department of Health and Human Services (U.S. Department of Health and Human Services, 2018a). This evidence-based document is based on a detailed review of the research literature done by the 2018 Physical Activity Guidelines Advisory Committee and the scientific report they produced (U.S. Department of Health and Human Services, 2018b). These two documents are a resource for RDNs that provides information and guidance to assist Americans in achieving the health benefits of regular PA. As clearly outlined in the Committee Scientific Report (U.S. Department of Health and Human Services, 2018b) and these PA Guidelines (U.S. Department of Health and Human Services, 2018a), PA guidance is indicated in chronic disease prevention and management, including overweight/obesity, cardiovascular disease, diabetes and metabolic syndrome, hypertension, cancer, osteoarthritis.

- **Exercise is Medicine® (EIM)** (E. i. Medicine), a global health initiative was launched in 2007 by the American College of Sports Medicine (ACSM) and the American Medical Association (AMA). The vision of EIM is to make PA assessment and promotion a standard in clinical care, connecting health care with evidence-based PA resources for people everywhere and of all abilities. EIM recommendations align with the 2018 Physical Activity Guidelines for Americans listed above (U.S. Department of Health and Human Services, 2018a) and ACSM’s Guidelines for Exercise Testing and Prescription, 10th edition, 2018 (Medicine, 2017a).

RDNs are skilled in translating the science of food and nutrition into practical solutions for healthy living, and when needed, disease management. RDNs use their nutrition expertise to assist patients/clients in making personalized, positive lifestyle changes. In communicating with their patients/clients, RDNs are commonly asked about relationships among nutrition, PA and healthy lifestyles. Thus, using the national PA guidelines, in coordination with their food and nutrition expertise, RDNs are positioned to assist patients/clients in integrating PA into their lives for the prevention and treatment of chronic disease and other conditions that impact health.
The Goal of the Physical Activity Toolkit for RDNs

The goal of this toolkit is to provide RDNs with a set of resources for encouraging PA as an effective strategy for the prevention, treatment and management of more than 40 of the most common chronic health conditions in adults. The toolkit can also help RDNs incorporate PA into weight management plans for people of all ages. The approach is designed to be flexible and to facilitate utilization by RDNs working in diverse settings, such as inpatient and outpatient clinical settings, private practice, wellness organizations/programs, community organizations, and public health.

Standards of Practice and Standards of Professional Performance

Evaluating the PA habits and restrictions of patients/clients during a comprehensive nutrition assessment is indicated by the Academy of Nutrition and Dietetics: Revised 2017 Standards of Practice in Nutrition Care and Standards of Professional Performance for Registered Dietitian Nutritionists (Committee, 2018d) and is consistent with the Nutrition Care Process (NCP) (Dietetics) and Swan et al, (Swan, 2017). The Academy Quality Management department provides several publications and tools that guide the practice and performance of RDNs in all settings.

The purpose of the decision aids and tools in the practice area of The Academy website is to assist RDNs in determining whether an activity or service is within their individual scope of practice. The Scope of Practice Decision Algorithm provides a structured process that enables RDNs to determine the degree to which they can safely and effectively incorporate PA guidance, based on the 2018 Physical Activity Guidelines for Americans, into their individual practice. RDNs who work in the focus area of sports dietetics or weight management are referred to the Standards of Practice and Standards of Professional Performance for Registered Dietitian Nutritionists (Competent, Proficient, and Expert) in Sports Nutrition and Dietetics (Steinmuller P, 2014) and the Standards of Practice and Standards of Professional Performance for Registered Dietitian Nutritionists (Competent, Proficient, and Expert) in Adult Weight Management (Jortberg et al., 2015). While these resources help determine one’s scope of practice, the Standards of Professional Performance (SOPP) covers six quality in practice, competence and accountability, provision of services, application of research, communication and application of knowledge, and utilization and management of resources. The SOPPs can assist the RDN with self-evaluation of competency and determine if competency matches the job description or focus area required of an RDN working in a position requiring knowledge of PA.
Contents of the Toolkit

This Physical Activity Toolkit for RDNs Contains the Following Information and Resources:

- Key recommendations of the 2018 Physical Activity Guidelines for Americans (U.S. Department of Health and Human Services, 2018a, 2018b).
- Key recommendations and resources of Exercise is Medicine® (EIM).
- Definitions for PA, PA guidance, exercise, and exercise prescription.
- Recommendations for RDNs to address PA with their patients/clients in accordance with The Academy’s NCP.
- Case studies demonstrating how to incorporate PA guidance into each step of the NCP for patients/clients with various health conditions or concerns.
- Scenario examples of nutrition interventions to assist the RDN in distinguishing PA guidance from exercise prescription.
- Downloadable professional guidance tools and handouts for patients/clients.
- Links to the 2018 Physical Activity Guidelines for Americans, ACSM Exercise is Medicine® and additional resources.
Development of the Toolkit

Development of the Physical Activity Toolkit for RDNs is a collaborative effort by the Weight Management (WM) and Sports, Cardiovascular, and Wellness Nutrition (SCAN) Dietetic Practice Groups (DPGs) of The Academy and the ACSM EIM®. The development team included RDNs from the WM and SCAN DPGs and professional members of ACSM including a physician/primary care provider and an ACSM Registered Clinical Exercise Physiologist®. The development team solidified concepts, created the toolkit and obtained approval from participating organizations. Many of the forms referred to in the toolkit are available for public use and can be downloaded from the EIM web site.

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Chapter 1: Physical Activity Overview and Recommendations

What is Exercise is Medicine®?

Exercise is Medicine®: A Global Health Initiative

Exercise is Medicine® (EIM), a global health initiative was launched by the American College of Sports Medicine (ACSM) and the American Medical Association (AMA) in 2007. EIM was designed to encourage physicians/primary care providers and other health care providers, regardless of specialty, to regularly assess patient physical activity (PA) and include PA when designing treatment plans. It also encourages these same providers to refer patients/clients to evidence-based PA resources including exercise programs and certified exercise professionals, especially those with NCCA-accredited certifications and the EIM credential. The vision of EIM is to make PA assessment and promotion a standard in clinical care, connecting healthcare with evidence-based resources for people everywhere and of all abilities. This initiative is committed to the belief that PA (any body movement that works muscles and uses more energy than when at rest) and exercise (a type of PA that is planned, structured and repetitive) are integral in the prevention and treatment of obesity and chronic disease and should be assessed as part of clinical care (EIM, Healthcare Providers Action Guide). Research shows that regular PA and exercise play an important role in the prevention and treatment of overweight/obesity and numerous chronic diseases, such as cardiovascular disease, stroke, diabetes, and hypertension (U.S. Department of Health and Human Services, 2018a). Integrating PA counseling into the United States (US) healthcare system has the power to significantly improve the health and quality of life of the American public.
At the core of the EIM initiative is the recommendation that healthcare providers, including Registered Dietitians Nutritionists (RDNs), assess and review every patient’s/client’s PA level at every visit. Patients/clients should then either be briefly advised/or educated on the benefits of incorporating PA into their lifestyle and/or referred to the appropriate resources (certified exercise professionals, programs or places). This initiative can be more easily implemented using a systems approach where the health care system integrates the assessment and referral pieces into the electronic health record (EHR) and forms referral partnerships with trusted community-based facilities and resources (the EIM Solution). RDNs should review the Health Care Providers’ Action Guide located on the EIM website. This Action Guide and associated resources will help to:

- Assess the current PA levels of the patients/clients;
- Determine the patient/client’s readiness to change;
- Educate the patients/clients on the health benefits of PA;
- Use counseling techniques to identify barriers to PA and develop strategies to implement PA; and
- Refer the patient/client to a certified exercise professional for a fitness assessment and exercise prescription.

Key Tools for the RDN in the Health Care Providers Action Guide include:

- Simple tips for starting the conversation about PA with patients/clients
- Safety screening tools and instructions (ACSM Preparticipation Screening Guidelines)
- Tips for getting healthy or medically cleared patients/clients started with PA using the Rx for Health series of patient/client handouts
- Physical Activity Vital Sign (PAVS) Questionnaire
- EIM Physical Activity Prescription Form
- Referral tools to help get patients/clients to certified exercise professionals
- Guidance on developing a network of trusted and certified exercise professionals

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The Roles of the RDN in the EIM global health initiative are given below:

Further details on these steps are available in a step-by-step process in the EIM Health Care Providers’ Action Guide

- Evaluate the PA habits of patient/client utilizing the EIM Summary Sheet and the Physical Activity Vital Sign sheet. This should be documented in the Assessment step of the Nutrition Care Process (NCP) (See Chapter 2).

- Determine a Nutrition Diagnosis related to PA level if appropriate for the patient/client. This should be documented in the Diagnosis step of the NCP (See Chapter 2).

- Determine the patient’s/client’s readiness to change with regard to incorporating PA into their lifestyle. This might be documented in the Diagnosis step of the NCP if patient is not ready for change (See Chapter 2).

- If warranted for the patient/client, educate on the health benefits of PA and the role of PA in the prevention and treatment of chronic disease. This should be documented in the Intervention step of the NCP (See Chapter 2).

- If PA clearance is not provided in the physician/primary care provider referral to the RDN, it is important to conduct a safety screening by using the ACSM Preparticipation Screening Guidelines. The updated evidence-based PAR-Q+ may also be a helpful additional screening tool and includes additional questions to help personalize pre-exercise recommendations. This activity is within the RDN’s scope of practice if the RDN is has a working knowledge of PA.

- Refer patient/client back to physician/primary care provider for medical clearance if required. Provide patient/client with a copy of the Preparticipation Screening form to take to their physician/primary care provider. This referral should be documented in the Intervention step of the NCP (See Chapter 2).

- Educate on the principles of the 2018 Physical Activity Guidelines for Americans. This education should be documented in the Intervention step of the NCP (See Chapter 2).

- If healthy or medically cleared, address adding or increasing PA as recommended by the 2018 Physical Activity Guidelines for Americans. Education or counseling strategies regarding PA should be documented in the Intervention step of the NCP (See Chapter 2).

- Refer the patient/client to a certified exercise professional whose certification is accredited by the NCCA (see Appendix 2 for a list of accredited exercise and fitness certifications). This referral should be documented in the Intervention step of the NCP (See Chapter 2).
Are Additional Credentials Necessary for RDNs to Provide Physical Activity Guidance, Fitness Assessments or Exercise Prescriptions?

RDNs, by virtue of their training, credentialing, and experience, focus on nutrition for the prevention and treatment of chronic diseases. However, there are numerous conditions such as obesity, diabetes, hypertension and coronary heart disease for which optimal treatment includes nutrition and PA interventions. Gaining confidence and competence in providing PA guidance as part of lifestyle counseling will allow RDNs to provide more comprehensive, evidence-based treatment to the patient/client.

This toolkit provides direction and resources for RDNs who do not possess fitness or exercise credentials or certifications to provide PA guidance to patients/clients in accordance with the RDN’s individual and legal, if applicable, scope of practice. However, there are limits to the level of PA guidance a RDN can competently and safely provide without additional training and appropriate certification. These limitations include the following assessments and exercise prescriptions:

- Fitness assessment,
- Exercise prescription (defined below),
- Design of specific exercise routines, and
- Supervised PA or fitness training schedules.

To be qualified to provide these services, the RDN would need to obtain exercise science knowledge and skills through continuing education, undergraduate or graduate course work, and/or exercise certification from an organization that offers NCCA accredited certification programs (Appendix 2). Upon completion of certification or course work, additional professional liability insurance specific for providing exercise assessment and prescription or specific exercise routines is essential before providing these services. Without these additional credentials, the RDN should refer the patient/client to a certified exercise professional whose certification is accredited by the NCCA.

**2018 Physical Activity Guidelines for Adults:**

- **Aerobic Activity (check)**
  - Frequency (days/week): 1 2 3 4 5 6 7
  - Intensity: Light (casual walk), Moderate (brisk walk), Vigorous (like jogging)
  - Time (minutes/day): 10 20 30 40 50 60 or more
  - Type: Walk, Run, Bike, Swim/Water Exercise, Other
  - Steps/day: 2,500 5,000 7,700 10,000 or more, Other

**What about aerobic activity?**

- Moderate activity is at a pace where you can talk but cannot “sing.” Examples: brisk walking, light biking, water exercise and dancing.
- Vigorous activity is done at a pace where you can’t say more than a few words without pausing for a breath. Examples: jogging, canoeing, tennis and fast bicycling.
- You can exercise for any length of time. For example, you might walk:
  - 30 minutes 5 days/week or
  - 20 minutes daily
  - 5 minutes here, 10 minutes there. Just work your way up to 150 total minutes/week.
- Your ultimate goal is to gradually build up to 7,500-10,000 steps/day.

**Muscle Strength Training (check)**

- Frequency (days/week): 1 2 3 4 5 6 7
- What about strength training?
  - You don’t have to go to a gym. Try elastic bands, do body weight exercises (chair sit-to-stands, floor or kitchen counter push-ups, planks or bridges) or lift dumbbells.
  - Heavy work around your home or yard also builds strength.
  - Strengthen your legs, back, chest and arms. To start, try 10-15 repetitions using light effort. Build up to medium or hard effort for 8-12 repetitions. Repeat 2-4 times, 2-3 days/week.
  - Give yourself a rest day between each strength training session.

**How will you get started this week?**

| Prescriber’s Signature: |

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Health Benefits of Physical Activity

The health benefits of PA are numerous. The 2018 Physical Activity Guidelines Advisory Committee Scientific Report, using an evidence-based approach, carefully examined the research literature to determine the strength of the scientific evidence for the health benefits of PA (U.S. Department of Health and Human Services, 2018b). In addition, ACSM also published a series of pronouncements (A. C. o. S. Medicine) supporting and further elucidating the 2018 PA Scientific Report. This report was then used to produce the 2018 Physical Activity Guidelines for Americans, 2nd Edition (U.S. Department of Health and Human Services, 2018a). Bulleted below are some of the key health benefits and findings of this committee, which are documented in their report and supported by strong scientific evidence (DHHS 2018 PA Guidelines; DHHS 2018 Scientific Report). RDNs who are not familiar with these Guidelines can retrieve them through the links provided in this document.

- PA delays risk of death from all causes. People who are physically active for approximately 150 minutes/week have a 33% lower risk of all-cause mortality than those who are not physically active.
- PA strongly reduces the risk of developing and dying from cardiovascular disease, including heart attack, stroke, and heart failure. Regularly active adults have lower rates of heart disease and stroke, and better blood pressure, blood lipid profiles, and physical fitness.
- PA improves cardiometabolic health and weight management in children and adults.
  - Regular PA reduces risk of developing type 2 diabetes and helps control blood glucose in people who already have type 2 diabetes. PA also contributes to lower plasma triglycerides and insulin levels.
  - Regular PA can help individuals maintain weight stability, lose weight, and prevent weight regain after weight has been lost.
  - Higher amounts of PA reduce risk of excessive body weight and adiposity in children ages 3-17 years.
  - PA reduces the risk of excessive weight gain and gestational diabetes during pregnancy.
  - PA provides important health benefits for adults with disabilities or chronic health conditions such as cancer, osteoarthritis, hypertension, type 2 diabetes, dementia, multiple sclerosis, spinal cord injury, and people with diseases or disorders that impair cognitive function.
- PA, especially progressive muscle-strengthening activities, slows the decline in bone density with aging, and preserves or increases muscle mass, strength and power, which reduce risk of falls and fall-related injuries.
- PA can prevent or delay the onset of substantial physical functional or role limitations.
- Physically active individuals sleep and feel better. Moderate-to-vigorous PA improves quality of sleep, promotes acute improvements in executive function, reduces clinical depression and symptoms of anxiety, and improves perceived quality of life.
- PA can significantly lower the risk of developing several commonly occurring cancers such as bladder, breast, colon, endometrium, esophagus, kidney, lung and stomach.
Key Terms and Definitions Used in Physical Activity

In order to understand and discuss PA with a patient/client, it is important to understand some key terms and definitions used in talking about PA. Below are briefly defined terms frequently used to describe the level and intensity PA, types of PA, activities of daily living, health-enhancing PA, and exercise. We have also explained how PA guidance differs from exercise prescription. These terms and definitions come from the 2018 Physical Activity Guidelines for Americans, 2nd edition (U.S. Department of Health and Human Services, 2018a) and the 2018 Physical Activity Advisory Committee Scientific Report (U.S. Department of Health and Human Services, 2018b).

Core Physical Activity Terms

- **Sedentary behavior** is any waking behavior characterized by an energy expenditure 1.5 or fewer metabolic equivalent of tasks (MET) while sitting, reclining or lying. (1 MET is the rate of energy expenditure while sitting at rest). Most office work, driving a car, and sitting while watching television are examples of sedentary behavior.

- **Physical Activity** is bodily movement produced by the skeletal muscles that results in energy expenditure and is used to discuss a full range of intensities. More specific descriptors bulleted below describes PA intensity, while level of PA is described in Table 1.
  - **Moderate-intensity activity**: Activity that requires between 3-6 METS such as brisk walking (2.5 to 4 mph), playing doubles tennis, or raking the yard.
  - **Vigorous-intensity activity**: Activity that requires 6 METS or more such as jogging, running, carrying heavy groceries or other loads upstairs, shoveling snow or participating in a strenuous fitness class.

- **Exercise** is PA that is planned, structured, repetitive and designed to improve or maintain physical fitness, physical performance, or health.

Types of Physical Activity

- **Daily life activities or activities of daily living**, refers to the light-intensity activities of daily life, such as standing, walking slowly and lifting lightweight objects.

- **Health-enhancing PA** is activity that, when added to baseline activity produces health benefits. In this document, the term “physical activity” generally refers to health-enhancing PA. Brisk walking, jumping rope, dancing, lifting weights, climbing on playground equipment at recess, and doing yoga are all examples of PA. Some people, such as postal carriers or carpenters on construction sites, may get enough PA on the job to meet the guidelines.

- **Exercise** is a form of PA that is planned, structured, repetitive, and performed with the goal of improving health or fitness.
• Physical activity guidance is a patient/client-centered process used by health professionals, including RDNs, to assist medically cleared patients/clients with envisioning how to increase their PA level in accordance with PA recommendations. This approach uses a patient’s/client’s current level of PA, readiness to change and personal preferences/interests as the basis on which personalized PA goals and plans can be made. The health care professional typically uses cognitive and behavioral counseling skills to facilitate discussion with the patient/client in defining and attaining PA goals.

• Exercise prescription is a detailed exercise plan, developed by a certified fitness professional, which is tailored to a person’s current fitness and health goals. This prescription is based on the patient’s/client’s current fitness level as assessed by objective fitness tests. These tests include, but are not limited to, cardiorespiratory fitness, musculoskeletal strength and endurance, flexibility, balance, and body composition. An RDN does not typically provide a specific exercise plan for a client unless they have additional training and are qualified to provide this expertise.

What Are The Physical Activity Recommendations?
As mentioned above, PA imparts significant health benefits, such as weight management, blood glucose control, improved blood lipid, decreased blood pressure, decreased anxiety, and an elevated sense of well-being. However, the question that many patient’s/clients ask is, “How much PA do I need?”. The 2018 Physical Activity Guidelines provide both general and specific guidelines that can be used by the RDN helping the patient/client become more physically active (U.S. Department of Health and Human Services, 2018a).

Content source: Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion
Encouraging Increased Baseline Activity

Unless, a patient/client is already very active, one of the first things an RDN can do is encourage patients/clients to increase their baseline activity levels.

- For all individuals, some activity is better than none. Even small increases in baseline activity can improve overall health.
- Increasing baseline activity (e.g. activities of daily living) increases energy expenditure, which can help in maintaining a healthy body weight. If these baseline activities are weight-bearing, they may improve bone health and physical function.
- Health is not the only reason to encourage more baseline activity. For example, walking short distances instead of driving can help reduce traffic congestion and the resulting air pollution.
- Incorporating short bouts of PA throughout the day, regardless of length, can increase baseline PA and provide health benefits. This approach can also help those who previously felt intimidated or subscribed to an “all or none” mentality of PA.
- Encouraging baseline activities helps build a culture where PA is the social norm.
- Short episodes of activity are appropriate for people who are inactive and want to gradually increase their level of activity. It is also appropriate for older adults whose activity may be limited by chronic conditions. Start slow and increase slowly.

Encouraging Increased Health-enhancing Physical Activity

When encouraging patients/clients to increase their PA or begin a regular fitness program, it is important for the activity to be safe and appropriate for the patient’s/client’s level of fitness and health. The 2018 Physical Activity Guidelines for safety PA are below (U.S. Department of Health and Human Services, 2018a):

- Individuals should protect themselves by using appropriate gear and sports equipment (e.g. appropriate footwear, bike helmets), seeking safe environments, following rules and policies, and making sensible choices about when, where, and how to be active.
- Individuals with chronic conditions (e.g., diabetes, heart disease, osteoarthritis) or symptoms (e.g., chest pain or pressure, dizziness, joint pain) should consult their healthcare provider about the types and amounts of activity appropriate for them.
- PA is safe for almost everyone, and the health benefits of PA far outweigh the risks. People without diagnosed chronic conditions, and who do not have symptoms, do not need to consult with a healthcare provider before beginning PA.
- People should choose types of PA that are appropriate for their current fitness level and health goals, start slowly and go slowly, increase activity gradually, and use appropriate gear (clothing, footwear, protective equipment).
- PA is fun, offers additional opportunities to be with friends and family, and improves fitness that facilitates participation in more intense activities or sporting events.

Patients/clients frequently want to know the health benefits they can expect from a given level of PA. The 2018 Physical Activity Guidelines continue to support earlier recommendations regarding the relationship between the amount of moderate-to-vigorous PA required to produce a given health benefit. Table 1 indicates the health benefits associated with each level of PA.
Table 1. Levels of Weekly Amounts of Aerobic Physical Activity (DHHS, 2018 PA Guidelines):

General Physical Activity Recommendations

Below are some general guidelines the RDN can use with patients/clients to help guide their PA. These recommendations are based on the 2018 PA Guidelines for Americans (U.S. Department of Health and Human Services, 2018a).

- Preschool-aged children (3-5 years) should be physically active throughout the day to enhance growth and development. Adult caregivers of these children should encourage active play.
- Children and adolescents (ages 6-17 years) should participate in 60 minutes or more of moderate-to-vigorous PA daily.
  - On at least 3 days a week this activity should include vigorous-intensity PA.
  - Muscle- and bone-strengthening activities should be a part of the 60 minutes of daily PA and should occur at least 3 days per week.
- Adults should move more and sit less throughout the day.
- For substantial health benefits, adults should participate in at least 150-300 minutes a week of moderate-intensity PA, such as brisk walking, or 75 minutes a week of vigorous-intensity aerobic activity.
- Additional health benefits are gained by engaging more than 300 minutes of moderate-intensity PA a week.
- Adults should participate in muscle-strengthening PA involving all major muscle groups (legs, hips, chest, back, shoulders, arms and abdomen) on 2 or more days a week.
• Older adults and people with limitations to these recommendations should do as much PA as their abilities and conditions allow.

• During pregnancy and the postpartum period, women should do at least 150 minutes of moderate-intensity PA.

• Adults with chronic conditions or disabilities, who are able, should do at least 150-300 minutes of moderate-intensity PA, or 75-150 minutes of vigorous-intensity PA. They should also engage in muscle-strengthening activities at least 2 days a week. If unable to meet the above recommendations, they should engage in PA according to their abilities and should avoid inactivity.

Percent of adults in 2019 who achieve at least 150 minutes a week of moderate-intensity aerobic physical activity or 75 minutes a week of vigorous-intensity aerobic activity (or an equivalent combination)
Respondents were classified as active if they reported at least 150 minutes per week of moderate-intensity activity, or at least 75 minutes per week of vigorous-intensity activity, or a combination of moderate-intensity and vigorous-intensity activity (multiplied by two) totaling at least 150 minutes per week. Adults aged ≥ 18 years. Respondents whose physical activity level could not be categorized due to missing physical activity data were excluded.

Source: Behavioral Risk Factor Surveillance System (BRFSS)
Linking the 2018 Physical Activity Guidelines for Americans with the 2015-2020 Dietary Guidelines for Americans

The 2018 Physical Activity Guidelines for Americans (U.S. Department of Health and Human Services, 2018a) and the 2015-2020 Dietary Guidelines for Americans (Agriculture) provide complementary and consistent, evidence-based advice for PA. The Dietary Guidelines for Americans (Agriculture) provide general guidance about PA and healthy eating for a wide range of health benefits, including weight management. The Dietary Guidelines for Americans are updated every 5 years. The 2015-20 Dietary Guidelines are available at https://health.gov/dietaryguidelines/2015/. The 2018 Physical Activity Guidelines for Americans include specific, evidence-based health benefits, amounts and types of PA individuals should engage in, and offer options and benefits to all populations and many subgroups. See 2018 Physical Activity Guidelines for Americans Executive Summary for a condensed version and key points.

The 2018 Physical Activity Guidelines emphasize the importance of PA for health and to provide PA guidance. Currently, 26% of men, 19% of women, and 20% of adolescents do not meet the Physical Activity Guidelines (U.S. Department of Health and Human Services, 2018a), which puts them at risk for obesity and chronic disease. For more information see the Move Your Way Campaign Materials at https://health.gov/paguidelines/moveyourway. This site contains downloadable resources to increase knowledge of the benefits of PA, resources for patients/clients and much more.
Chapter 2: Scope of Practice and the Nutrition Care Process

What is the Role of the RDN in Providing Physical Activity Guidance?

Nutrition and physical activity (PA) are interrelated components of a healthy lifestyle. Registered Dietitian Nutritionists (RDNs) can find it advantageous to address PA in conjunction with nutrition education and counseling associated with energy balance and chronic disease management. Providing general PA recommendations from credible sources, such as the 2018 Physical Activity Guidelines for Americans, can be critical to successfully achieving goals for nutrition and overall health. This toolkit is designed to assist RDNs in determining how and to what extent providing PA guidance may fit into their individual and legal, if applicable, scope of practice, and when to make a referral to a certified exercise professional.

What is Scope of Practice for an RDN?

According to the Academy of Nutrition and Dietetics (The Academy) Definition of Terms (Dietetics), ‘scope of practice’ in nutrition and dietetics encompass the range of roles, activities, and regulations within which nutrition and dietetics practitioners perform. For credentialed practitioners, ‘statutory scope of practice’ is typically established within the practice act and interpreted and controlled by the agency or board that regulates the practice of the profession in a given state. Additionally, The Academy Code of Ethics (Dietetics) states that “nutrition and dietetics practitioners shall practice using an evidence-based approach within areas of competence, continuously develop and enhance expertise, and recognize limitations”. Thus, each credentialed nutrition and dietetics practitioner possesses an individual scope of practice that “has flexible boundaries to capture the breadth of the individual’s professional practice.” Individuals and organizations must ethically take responsibility for
determining competence of each individual to provide a specific service. Not all RDNs will practice to the full extent of the range of nutrition and dietetics practice. In addition, The Academy scope of practice (Dietetics) defines which professionals provide nutrition and dietetic services, in what settings, and under which guidelines or parameters. Additionally, state practice acts (licensure, certification, title protection) impose legal boundaries that delineate the services provided by RDNs practicing within that state. Therefore, RDNs have a ‘legal scope of practice’ if they live and practice within a state with a practice act that affects RDNs.

Driven by competency, the individual scope of practice for RDNs is a fluid concept. For example, advances in evidence-based practice, changes in the healthcare environment, and innovations in education provide RDNs with opportunities to attain additional knowledge, skill, and competencies. Providing PA guidance to apparently healthy individuals represents an opportunity for RDNs to expand their ability to leverage their full scope of practice.

What Academy Tools are Available Regarding Advancing the Practice of Nutrition and Dietetics?

The Academy offers members many resources to manage and advance their practice while staying within one’s scope of practice. Career development resources, position and practice papers, and continuing professional development keep RDNs current in their knowledge base with evidence-based guidelines and practical information. The Academy and the Commission on Dietetic Registration (CDR), state it is in the best interest of the profession, and the public it serves, to have a Code of Ethics (Dietetics) that guides professional practice and conduct. The ethics code itself and educational resources supporting this code are readily available. The Quality Management branch of The Academy monitors nutrition service quality and provides guidelines for safe, effective patient-focused care. The Quality Management area of the website provides information on:

- Definition of Terms List
- Competence, Case Studies and Practice Tips
- Quality Improvement
- Scope of Practice
- Standards of Excellence
- Standards of Practice
- National Quality Accreditation and Regulations

A good starting point to evaluate your individual comfort level and scope of practice regarding PA guidance is the Scope of Practice Decision Algorithm.
The Academy’s Nutrition Care Process (NCP)

In 2003, The Academy’s House of Delegates adopted the Nutrition Care Process (NCP) (Dietetics) in an effort to provide credentialed nutrition and dietetics professionals with a framework for critical thinking and decision-making. The NCP is a systematic approach to providing high-quality nutrition care, and its use can lead to more efficient and effective care and greater recognition of the role dietetic professionals have in all care settings. The NCP consists of distinct, interrelated steps also known as ADIME (Assessment, Diagnosis, Intervention, Monitoring, and Evaluation) that are defined below:

- **Nutrition Assessment:** The RDN collects and documents information such as a food or nutrition-related history, biochemical data, medical tests and procedures; anthropometric measurements, nutrition-focused physical findings and client history.

- **Diagnosis:** Data collected during the nutrition assessment guides the RDN in selection of the appropriate nutrition diagnosis (i.e., naming the specific problem).

- **Intervention:** The RDN then selects the nutrition intervention that will be directed to the root cause (or etiology) of the nutrition problem and aimed at alleviating the signs and symptoms of the diagnosis.

- **Monitoring/Evaluation:** The final step of the NCP is monitoring and evaluation, which the RDN uses to determine if a patient/client has achieved, or is making progress toward, the planned goals.

Documentation using the NCP requires use of the electronic Nutrition Care Process Terminology (eNCPT) (Dietetics). This online publication replaces previous versions of The International Dietetics and Nutrition Terminology (IDNT) Reference Manual and contains a narrative explanation of the NCP. Benefits of electronic subscription includes access to the most up-to-date terminology and reference sheets that provide clear definitions and explanation of all terms, including indicators, criteria for evaluation, etiologies, and signs and symptoms.
Nutrition Assessment

The first step in the Academy’s NCP and the American College of Sports Medicine (ACSM) Exercise is Medicine (EIM) global health initiative is Nutrition Assessment.

**NCP Step 1: Nutrition Assessment.** RDNs use accurate and relevant data and information to identify nutrition-related problems. More specifically, Nutrition Assessment is defined as “a systematic approach to collect, classify, and synthesize important and relevant data needed to identify nutrition-related problems and their causes. This step also includes reassessment for comparing and re-evaluating data from the previous interaction to the next and collection of new data that may lead to new or revised nutrition diagnoses based on the client’s status or situation. It is an ongoing, dynamic process that involves initial data collection and continual reassessment and analysis of the client’s status compared to accepted standards, recommendations, and/or goals. This contrasts with nutrition monitoring and evaluation where nutrition and dietetics practitioners use the same data to determine changes in client behavior, nutritional status, and the efficacy of nutrition intervention.” (https://www.ncpro.org/default.cfm?).

The Nutrition Assessment step is the basis for the entire NCP. All the components of the Nutrition Assessment are used to influence the diagnosis, intervention, monitoring, and future evaluations. Like with any Nutrition Assessment, the RDN must be able to accurately collect information and separate relevant from irrelevant data. The same assessment components apply to patients/clients regarding PA: food and nutrition-related history, anthropometric measurements, biochemical data, medical tests and procedures, nutrition-focused physical findings, and client history. The eNCPT should be used in all Nutrition Assessment documentation.

For this toolkit, we will highlight the following Nutrition Assessment terms:

- Food/Nutrition-Related History (FH)
  - Physical Activity and Function (7)
- Physical activity (7.3)
  - Physical activity history (FH-7.3.1)
  - Consistency (FH-7.3.2)
  - Frequency (FH-7.3.3)
  - Duration (FH-7.3.4)
  - Intensity (FH-7.3.5)
  - Type of physical activity (FH-7.3.6)
  - Strength (FH-7.3.7)
  - Handgrip strength (FH-7.3.7.1)
  - TV/Screen time (FH-7.3.8)
  - Other sedentary activity time (FH-7.3.9)
  - Involuntary physical movement (FH-7.3.10)
  - Non-exercise activity thermogenesis (FH-7.3.11)
• Factors affecting access to physical activity (7.4)
  • Neighborhood safety (FH-7.4.1)
  • Walkability of neighborhood (FH-7.4.2)
  • Proximity to parks/green space (FH-7.4.3)
  • Access to physical activity facilities/programs (FH-7.4.4)

NOTE: When writing your NCP Nutrition Assessment documentation, the eNCPT codes are not included in your documentation/note. We have included them here to aid you in finding the codes within the list of the Nutrition Assessment Terminology.

Physical Activity Assessment: If a Fitness Assessment is Available

Some patients/clients may come to the RDN appointment with results of a Fitness Assessment and/or Exercise Prescription, but most will not. If these data are available, it is appropriate to document using the appropriate eNCPT (Dietetics) listed previously. Many people benefit from a fitness assessment and subsequent exercise prescription to help them begin or enhance their current fitness level with an appropriate individualized plan. The fitness assessment is not a required component to PA guidance, if the patient/client is cleared for independent activity either by their physician/primary care provider or based on their ACSM Preparticipation Screening Guidelines. Exercise professionals whose certifications are accredited by National Commission for Certifying Agencies ((NCCA)) may perform some or all of the following physical fitness assessments on a patient/client:

• Cardiorespiratory fitness (per fitness or exercise certification scope of practice; i.e., three-minute step test, or sub-maximal and maximal protocol utilizing a treadmill or cycle ergometer)
• Musculoskeletal strength and endurance
• Flexibility
• Balance
• Body Composition

Note that unless the RDN has attained the appropriate fitness or exercise-related certification or credentials to conduct the physical fitness assessments listed above, the RDN is not qualified to conduct these assessments. Lacking the necessary fitness or exercise credentials, the RDN needs to refer the patient/client to an appropriately certified exercise professional for physical fitness assessment.
Physical Activity Assessment: If a Fitness Assessment is NOT Available

**Step 1: Assess Physical Activity History and Current Physical Activity Level**

If results from a fitness assessment are not available, it is important for the RDN to assess for PA history and current levels. When including PA as part of the Nutrition Assessment, the EIM Health Care Providers’ Action Guide (E. i. Medicine) and associated resources will be helpful to:

1. Assess the current PA levels and exercise history of a patient/client;
2. Determine if medical clearance is required for participation in PA; and
3. Determine the patient/client’s readiness to change.

**Is your client participating in PA?**

If NO  Document this using the eNCPT.

If YES  Determine if patient/client meeting the 2018 Physical Activity Guidelines for Americans, or if not, where they fall within these guidelines.

The RDN may utilize two resources found as part of the EIM Health care Provider’s Action Guide:

- The Physical Activity Vital Sign.
- The EIM Summary Sheet

Review the patient’s/client’s information and determine whether the patient/client is meeting the current recommendations from the 2018 Physical Activity Guidelines for Americans. Document findings using the eNCPT related to PA (7.3).
Step 2: Assess Physical Activity Readiness (Exercise Stage of Change)

- If the patient/client is not participating in appropriate levels of PA, ask what is preventing participation and determine if there is a willingness to begin lifestyle modification to include or increase PA. Using motivational interviewing skills, in conjunction with the EIM Exercise Stage of Change document, can help determine the next action steps. Motivational interviewing techniques (Clifford D, 2015) are ideal for addressing past and current interests, knowledge, beliefs, and attitudes toward PA, obstacles to PA, and interest in education related to PA.

- In step 2, identify the Stage of Change and document in the Nutrition Assessment portion of the health record. Identified barriers used to determine Stage of Change will be used to develop an appropriate intervention (action step).

Step 3: Screen Your Patient/Client for Safety Participating in Physical Activity

If a patient/client wants to incorporate or increase levels of PA into their lifestyle, the ACSM provides recommendations for exercise preparticipation screening. Previous pre-exercise screening protocols included risk factor identification; however, this has not been shown to reduce the risk of a cardiac event during exercise and creates unnecessary barriers for a patient/client who will benefit most from a routine of light-to-moderate intensity PA.

The RDN can either complete the ACSM Preparticipation Screening Guidelines or the PAR-Q+ with the patient/client, or provide this for the patient/client to take to their physician/primary care provider for review. When in doubt, obtain medical clearance for PA before discussing PA guidance with a patient/client or refer to a certified exercise professional (Appendices 2 and 3).

The data gathered and interpreted during the Nutrition Assessment, will be used to determine if a nutrition problem (or in this case one related to PA) or Nutrition Diagnosis exists. The better the information documented in the Nutrition Assessment, the better the chances are at accurately identifying the problem and the etiology or “root cause” of the problem. That etiology then drives the intervention step of the NCP.
Nutrition Diagnosis

Nutrition Diagnosis is the second step of the NCP. In this step the RDN identifies and labels existing nutrition problem(s) that the RDN is responsible for treating. Nutrition Diagnosis allows the RDN to use critical judgment to assess and analyze information provided by a patient/client and identify a problem or issue that can be treated by the RDN. As a result, the patients/clients improve their health outcomes. As previously stated, PA is an integral component in the prevention and treatment of chronic diseases. Since the RDN can be positioned to address PA as a complement to nutrition-related lifestyle changes, there are indications to use PA in PES (Problem/Diagnosis, Etiology, Signs and Symptoms) statements within the health/medical record.

A PES statement is used to describe a problem, its root cause, and the assessment data that provide evidence for the nutrition diagnosis. A diagnosis related to PA is typically made in coordination with one or more nutrition-related diagnoses.

The purpose of this PA Toolkit for RDNs and for utilizing ACSM's EIM resources is to assist RDNs in routinely providing safe and effective PA guidance to patients/clients, and in referring them to certified exercise professionals when a personalized fitness assessment and exercise prescription or supervised activity is of interest or recommended by the patient’s/client’s physician/primary care provider. The following examples of PES statements relate to PA.

The format for a PES statement is given below:

**Problem/Diagnosis** related to **etiology** as evidenced by **signs and symptoms**.

The Nutrition Diagnosis is based on the RDN's professional assessment of the findings in the Nutrition Assessment step of the NCP. The proper terminology and language concerning Nutrition Diagnoses that relate to PA are located in the eNCPT (Dietetics). Depending on the patients/clients medical status, severity of their condition, personal goals and lifestyle issues, the RDN may not have a PA-related Nutrition Diagnosis for each patient/client at each appointment.

The PA-related Nutrition Diagnosis may relate to the patient’s/client’s current PA and health status, PA clearance to begin exercise, stage of readiness to change, and any other information regarding knowledge, attitudes and beliefs about PA identified in the Nutrition Assessment step of the NCP. Lastly, the Nutrition Diagnosis is evidenced by biometric data, statements provided by the patient/client, and symptoms reported by the patient/client or other similar indicators.

Sample PES statements related to PA could include:

- Overweight/obesity (NC-3.3) related to lack of PA as evidenced by body mass index (BMI) of 32 kg/m2.

- Physical inactivity (NB-2.1) related to severe joint pain secondary to arthritis as evidenced by patient/client stating that when they are active for more than 7 to 8 minutes their joints hurt.

- Underweight (NC-3.1) related to excessive exercise as evidenced by the patient’s/client’s stated exercise pattern of 2 ½ hours daily and measured weight of 110 pounds, which is a BMI of 16 kg/m2.
• Poor nutrition quality of life (NB-2.5) related to lack of self-efficacy for making change in current activity as evidenced by patient marking limited mobility secondary to rheumatoid arthritis on medical history.

• Not ready for diet/lifestyle change (NB-1.3) related to physical inactivity as evidenced by the patient’s/client’s answers to the Stages of Readiness to Change questions that indicate they do not intend to become physically active in the next 6 months.

NOTE: As in the NCP Nutrition Assessment documentation, the eNCPT codes are not written into the PES statement. The eNCPT codes are included here to aid with locating in the list of Nutrition Diagnostic Terminology.

There are many Nutrition Diagnoses in the eNCPT related to PA, including the examples provided below with their diagnosis codes:

• Not ready for diet/lifestyle change (NB-1.3)
• Self-monitoring deficit (NB-1.4)
• Physical inactivity (NB-2.1)
• Excessive physical activity (NB-2.2)
• Inability to manage self-care (NB-2.3)
• Poor nutrition quality of life (NB-2.5)

Keep in mind, the Nutrition Intervention (NCP-Step 3) is driven by the root cause of the problem (Nutrition Diagnosis) and the Nutrition Monitoring and Evaluation (NCP-Step 4) must correspond to the RDN’s Nutrition Diagnosis to determine if the problem is improving or resolved. Therefore, when making a Nutrition Diagnosis related to PA, it is important to use the Nutrition Diagnosis that most closely matches the patient’s/client’s stage of readiness to change. Three examples are provided below with diagnostic codes.

Precontemplation Stage

Physical inactivity (NB-2.1) related to lack of self-efficacy of making change as evidenced by patient’s/client’s comments on being too tired to exercise.

Contemplation Stage

Physical inactivity (NB-2.1) related to lack of prior exposure to accurate information regarding PA as evidenced by inability to cite current guidelines.

Preparation Stage

Physical inactivity (NB-2.1) related to inability to recruit family or friends to accompany the patient/client during physical activities as evidenced by the patient’s/client’s statements of PA level less than the 2018 Physical Activity Guidelines for Americans and confidence to participate in PA alone.
It is important to remember that some activity is better than none, such as in the Preparation Stage of Change; however, to determine a patient/client as being in the Action Stage, the goal is to meet the minimum recommendations of the 2018 Physical Activity Guidelines for Americans and includes meeting the minimum recommendations for less than 6 months.

In summary, the Nutrition Diagnosis step is a vital phase in the NCP because it allows the RDN to use critical judgment to assess and analyze information provided by the patient/client and identify a problem or issue that can be used to help patients/clients improve their health outcomes. Remember, depending on a patients/clients medical status, severity of their condition, personal goals and lifestyle issues, the RDN may not have a PA-related Nutrition Diagnosis for each patient/client at each encounter. In keeping with the EIM Global Health Initiative, PA should be assessed and reviewed at every visit with healthcare providers, including the RDN.

**Nutrition Intervention**

Nutrition Intervention is the third step of the NCP. Once the RDN has completed a Nutrition Assessment and identified a PA-related Nutrition Diagnosis, they are ready to help the patient/client decide if or how they want to incorporate PA as part of their intervention. The Academy defines the intervention step as: “a purposely planned action(s) designed with the intent of changing a nutrition-related behavior, risk factor, environmental condition, or aspect of health status to resolve or improve the identified nutrition diagnosis(es) or nutrition problem(s). Nutrition interventions are selected and tailored to the client needs by planning and implementing appropriate interventions. The nutrition diagnosis and its etiology drive the selection of a nutrition intervention. The nutrition intervention is typically directed toward resolving the nutrition diagnosis(es) by altering or eliminating the nutrition etiology(ies). Less often, it is directed at relieving the signs and symptoms of the nutrition problem or problems. Nutrition intervention goals, ideally, developed collaboratively with the client, provide the basis for monitoring progress and measuring outcomes.”

There are two different, yet interrelated steps in the Nutrition Intervention: planning and implementing. Examples of these steps related to PA are listed below.

Planning includes:

- Prioritizing PA interventions based on health status and available resources.
- Collaborating with the patient/client to establish appropriate PA goals.
- Selecting appropriate PA strategies that are focused on the etiology of the problem and that are known to be effective based on the 2018 Physical Activity Guidelines for Americans and that are within the RDN’s scope of practice.
• Referring the patient/client to their physician/primary care provider and/or certified exercise professional when warranted.

• Defining the time and frequency of care, including intensity, duration, and follow-up.

Implementation is the action phase and involves:

• Collaborating with the patient/client and/or certified exercise professional to carry out the plan for incorporating PA into the lifestyle.

• Documenting the PA plan in the health/medical record.

• Modifying the plan as needed.

• Re-assessing and verifying that the plan is being implemented.

• Revising goals and strategies based on response to intervention.

In addition to the RDN’s PA-related Nutrition Assessment and Diagnosis (PES statement(s)), the intervention should be guided by the 2018 Physical Activity Guidelines for Americans. As with nutrition-related intervention goals, it is vital that the PA intervention goals be patient/client-centered, patient/client-driven, and appropriate for the patient/client’s health status and stage of readiness to change.

**Nutrition Intervention Related to Physical Activity Guidance**

**Nutrition Intervention Terminology**

The Nutrition Intervention Domains related to PA incorporate Nutrition Education (E), Nutrition Counseling (C), and Coordination of Nutrition Care by a Nutrition Professional (RC). Examples of Nutrition Intervention Terminology commonly used with delivering PA guidance include:

**Nutrition Education (E)**

• Nutrition Education Content (1)
  • Physical activity guidance (E-1.3)

• Nutrition Education Application (2)
  • Nutrition related laboratory result interpretation (E-2.1)
    Example: interpreting body composition results
  • Technical nutrition education (E-2.3)
    Example: teaching patient’s/client’s how to use apps or computer software for energy balance assessment

**Nutrition Counseling (C)**

• Theoretical Basis/Approach (1)
  • Cognitive behavioral therapy (C-1.1)
  • Health belief model (C-1.2)
  • Transtheoretical model stages of change (C-1.4)
• Strategies (2)
  • Motivational interviewing (C-2.1)
  • Goal Setting (C-2.2)
  • Self-monitoring (C-2.3)
  • Problem solving (C-2.4)
  • Social support (C-2.5)
  • Stress management (C-2.6)
  • Stimulus control (C-2.7)
  • Cognitive restructuring (C-2.8)
  • Relapse prevention (C-2.9)
  • Rewards/contingency management (C-2.10)

Coordination of Nutrition Care by a Nutrition Professional (RC)

• Collaboration and Referral of Nutrition Care (1)
  • Team meeting (RC-1.1)
  • Referral to RDN with different expertise (RC-1.2)
    Example: Certified Specialist in Sports Dietetics (CSSD)
  • Collaboration with other providers (RC-1.4)
    Example: Certified Exercise Professional
  • Referral to other providers (RC-1.5)
    Example: Certified Exercise Professional
  • Referral to community agencies/programs (RC-1.6)

• Discharge and Transfer of Nutrition Care to New Setting or Provider (2)
  • Discharge and transfer to other providers (RC-2.1)
  • Discharge and transfer to another nutrition professional (RC-2.3)

NOTE: When writing the NCP Nutrition Intervention documentation, the eNCPT codes are not written into the document. The codes are included here to aid you in finding them within the list of Nutrition Intervention Terminology.

The Domain Food and/or Nutrient Delivery (ND) is unrelated to PA and should not be used with PA-related nutrition interventions.

Nutrition Intervention Options

In this section several PA-related Intervention options are described in more detail and examples provided.

Before proceeding, the RDN should self-reflect on their comfort level and knowledge base related to discussing PA with a patient/client. If not completed previously, review the 2018 Physical Activity Guidelines for Americans and read the Physical Activity Guidelines for Americans Executive Summary for a condensed version and key points. In order for the RDN to provide the best PA guidance, they should fully understand the guidelines and be able to explain them to a patient/client. Some key components of the PA Guidelines that need to be understood are listed below:
• Health benefits of PA
• Types of PA (aerobic, muscle-strengthening, bone-strengthening)
• Intensity, frequency, duration of PA
• PA guidelines for different ages and populations
• Guidelines for safe PA

In addition to the 2018 Physical Activity Guidelines for Americans document and its Executive Summary, a PowerPoint Presentation is available for use with patients/clients that summarizes key points. If you are still not comfortable with providing PA guidance after reviewing the PA Guidelines, it is best to refer your patient/client to another qualified professional and document this referral in the Nutrition Intervention section of the health/medical record.

Another resource that RDNs can use for self-assessment is The Academy’s Standards of Practice and Standards of Professional Performance for Registered Dietitian Nutritionists (Competent, Proficient, and Expert) in Sports Nutrition and Dietetics (Steinmuller P, 2014). This document can help the RDN understand their own knowledge of nutrition as it relates to exercise and will help the RDN understand the skills that a Certified Specialist in Sport Dietetics (CSSD) possesses in case the need for referral to another RDN arises during patient/client care.

**Education and Counseling**

**Nutrition Education.** Education concerning PA should be tailored to the patient’s/client’s stage of readiness to change and the RDN’s qualifications for discussing PA. Regardless of PA related experience, all RDNs should be able to do the following:

• Help take the fear out of the term ”exercise” (PA and exercise may include enjoyable events and activities.)
• Discuss the health benefits of PA. Refer to the 2018 Physical Activity Guidelines for Americans and the EIM Health Care Providers’ Action Guide for this information.
  • Make a list of community resources around PA to share with your patient/client ((Referral to community agencies/programs/facilities that offer PA (RC-1.6)).)
• Make a list of certified exercise professionals (See Appendices 2 and 3 to find one in your area). Types of certified exercise professionals are defined later in this chapter. Refer patient/client to another RDN with expertise delivering PA guidance (Referral to RDN with different expertise (RC-1.2)) and/or refer to a certified exercise professional for a fitness assessment and exercise prescription if desired by the patient/client (Referral to other providers (RC-1.5)).

If the RDN demonstrates competence with the 2018 PA Guidelines for Americans, then details such as mode of exercise/activity, exercise intensity, exercise frequency and duration, and relationship of PA to disease prevention and management can be discussed. The ACSM’s EIM website provides Prescription (Rx) for Health series handouts related to various medical conditions that can be shared with patients/clients. Keep in mind that individuals with medical conditions should be referred to a certified exercise professional. The handouts can be used to start the conversation about incorporating PA into one’s lifestyle for disease prevention and management and are also available in Spanish.

Exercise Rx for Medical Conditions Handouts

- Alzheimer’s
- Aneurysm
- Asthma
- Atrial Fibrillation
- Bleeding Disorder
- Blood Lipid Disorders
- Cancer
- Chronic Kidney Disease
- Chronic Liver Disease
- Chronic Obstructive Pulmonary Disorder (COPD)
- Depression or Anxiety
- Fibromyalgia
- Heart Failure
- Heart Valve Disease
- HIV/AIDS
- Hypertension
- Inflammatory Bowel Disease (IBD)
- Low Back Pain
- Mobility Limitations
- Nonalcoholic Fatty Liver Disease
- Osteoarthritis
- Osteoporosis
- Overweight/Obesity
- Pacemakers
- Parkinson’s Disease
- Peripheral Arterial Disease
- Prediabetes
- Pregnancy
- Rheumatoid Arthritis
- Type 2 Diabetes

If the RDN determines that the patient/client needs to be referred to a certified exercise professional for even basic PA guidance, the RDN should still provide encouragement and information concerning the importance of PA at each visit by addressing and following up on the referral.
Nutrition Counseling. Nutrition counseling is part of the Nutrition Intervention step. In Nutrition Assessment, the RDN may use the Transtheoretical Model of Change, Motivational Interviewing, and other counseling or coaching skills to gather information and apply a nutrition diagnosis (eNCPT). In the Nutrition Intervention step, the RDN may continue using these counseling models, and can apply additional models based on RDN training and skill sets. The additional models may include Cognitive-Behavioral Theory, Health Belief Model, Social Learning Theory, goal setting, self-monitoring, problem solving, social support, stress management, relapse prevention, and other theories and techniques that are vital to facilitate PA change between patient/client visits. If the RDN cannot demonstrate competence with these strategies, the RDN should refer to a certified exercise professional.

**Nutrition Intervention Step Specific to Physical Activity Guidance**

**Step 1 – Safety Screening**

If the patient/client is interested in discussing PA, it is important to screen the patient/client for safety. The ACSM provides recommendations for exercise preparticipation screening (discussed in Chapter 1).

The RDN can either complete the ACSM Preparticipation Screening Guidelines or the PAR-Q+ with the patient/client, or provide this for the patient/client to take to their physician/primary care provider for review. When in doubt, obtain medical clearance for PA before discussing PA guidance with the patient/client or refer to a certified exercise professional (Appendices 2 and 3).
Step 2 – Develop Intervention Strategy Based on Exercise Stage of Change

Following assessment of the patient’s/client’s stage of readiness to change, the RDN may begin the intervention step with a general discussion of benefits of PA for the patient’s/client’s desired health outcomes and goals. Aiding the patient/client in goal setting specifically related to increased PA utilizing the 2018 Physical Activity Guidelines for Americans is appropriate in most cases. Some patients/clients desire more specific guidance or routines or may not have been medically cleared for unsupervised PA. As part of coordination of care, referral to an appropriate certified exercise professional will be appropriate the patients/clients who desire more specific guidance or routines, who are cleared only for supervised activity by their physician/primary care provider, or who exhibit conditions where the RDN is uncomfortable discussing PA.

The following are examples of possible strategies and resources the RDN could employ while using the Transtheoretical Model of Change (Stages of Change Model) in nutrition counseling for patients cleared for PA activity participation.

Precontemplation Stage – (Patient/client has no intention to be physically active.)

- Use the EIM Health care Provider’s Action Guide for simple tips for starting the conversation about PA with a patient/client.
- Refer to the Exercise Stage of Change Action Step document for more detailed definitions.
- Encourage the patient/client to consider engaging in PA according to the 2018 Physical Activity Guidelines for Americans premise that some activity is better than none.
- Discuss the health benefits of regular PA particularly related to that patient’s unique health concerns and needs.
- Provide EIM Handouts listed below if they are appropriate for the patient/client:
  - Sit Less-Move More
  - Being Active for a Better Life
  - Being Active as We Get Older
- The patient/client is likely not ready to receive a PA prescription at this point.
- Do not set goals/plans to engage in any PA at this point. Failure to achieve goals will not support the principles of self-efficacy.

Contemplation Stage – (Patient/client knows they should exercise and is thinking about becoming physically active.)

- Patient/client may be receptive to receiving basic guidance on becoming physically active.
- Refer to the Exercise Stage of Change Action Step documentation.
- NOTE: On this document, “write prescription” is referring to providing exercise guidance from the 2018 Physical Activity Guidelines for Americans, if the patient/client is medically cleared. This does not refer to conducting a fitness assessment and/or individualized exercise prescription.
• Use the EIM PA Prescription Form to provide your independent or medically cleared patient/client with guidance based on the 2018 Physical Activity Guidelines for Americans.

• Refer to a certified exercise professional for the patient/client requiring medical clearance, PA supervision, or desiring a fitness assessment and/or exercise prescription (Referral to other providers (RC-1.5)).

• Emphasize the pros and reducing the cons of being more physically active that are particularly relevant to the patient.

• Recommend starting with small steps. Help the client set goals to start slowly.

• Provide a list of community PA resources (Referral to community agencies/programs (RC-1.6))

Preparation Stage – (Patient/client is planning to become physically active in the near future.)

• Refer to the Exercise Stage of Change Action Step document.

• NOTE: On this document, “write prescription” is referring to providing exercise guidance from the 2018 Physical Activity Guidelines for Americans, if the patient/client is medically cleared. This does not refer to conducting a fitness assessment and/or individualized exercise prescription.

• Use the EIM PA Prescription Form to provide your independent or medically cleared patient/client with guidance based on the 2018 Physical Activity Guidelines for Americans.

• Refer to a certified exercise professional for the patient/client requiring medical clearance, PA supervision, or desiring a fitness assessment and/or exercise prescription (Referral to other providers (RC-1.5)).

• Provide a list of community PA resources (Referral to community agencies/programs (RC-1.6)) such as, exercise classes, group outdoor activities, and fitness facilities.

• Recommend planning and self-monitoring strategies.

Action – (Patient is meeting the physical activity guidelines but for less than 6 months.)

• Applaud current efforts; encourage continued physical activity.

• Discuss relapse prevention strategies: planning for challenges, getting back to activity after a lapse.

• Revise the PA plan as needed to be consistent with the 2018 Physical Activity Guidelines for Americans.

• Provide a list of community PA resources if needed ([Referral to community agencies/programs (RC-1.6)].

• Refer the patient/client to a certified exercise professional (see Appendix 2 and 3) for more variety and/or enhanced plans or a formal fitness assessment and exercise prescription (Referral to other providers (RC-1.5)).
Maintenance Stage – (Patient is meeting the physical activity guidelines for the last 6 months or more.)

- Applaud efforts; encourage continued physical activity.
- Encourage individuals to spend time with people with similar healthy behaviors; continue to engage in healthy activities to cope with stress.

Goal Setting: Action and Maintenance Stage

Once the RDN identifies and prioritizes specific intervention strategies, the RDN should facilitate goal setting with the patient/client using counseling skills either in conjunction with education or by itself. Goal setting should be a collaborative activity between the patient/client and the RDN. In goal setting the client decides which goals to implement from all potential activity recommendations made in conjunction with the RDN.

Goals are set to aid the patient/client in obtaining the knowledge and developing the skills necessary to achieve the desired outcomes. Goals can be used as learning opportunities in the Monitoring and Evaluation stage to assess effective behavioral strategies and problem solve challenges to successes. Goals that are positive in nature may elicit better outcomes by encouraging a positive behavior versus a deprivation behavior. Using SMART goals (defined below) more accurately defines the goal as an achievable behavior whose outcome can be measured.

- S - Specific
- M - Measurable
- A - Actionable
- R - Realistic
- T - Time-bound

As part of the nutrition intervention, the RDN should document the goals the patient/client sets and the outcomes expected at the next visit. For the best outcomes, it is vital to use interventions and set goals appropriate to the patient’s/client’s stage of readiness to achieve desired outcomes. This important step will guide monitoring and evaluation tactics.

For the patient/client who is cleared for independent activity, SMART goals the RDN may help their patient/client define include:

- Utilizing a pedometer or fitness tracker (e.g. accelerometer on smart phone) to increase the patient’s/client’s daily steps.
- Adding 30 minutes of moderate-intensity PA activity per week, defined by the 2018 Physical Activity Guidelines for Americans, until they meet the recommended 150 minutes per week.

One example of a SMART goal is:

“I will add 10 minutes each day to my current weekly walking session on Monday, Wednesday and Thursday.”
Another area of PA that the patient/client may want to address is resistance training. Setting goals focused on resistance training as recommended in the 2018 Physical Activity Guidelines for Americans would be specific to 1-2 days per week, utilizing the major muscle groups. This recommendation would not include specific exercises unless the RDN is a certified exercise professional whose scope of practice includes exercise prescription. However, it might include the RDN recommending a client to a resistance training class or exercise professional.

Using the SMART format will allow the RDN to determine if a PA-related nutrition diagnosis needs to be changed during the Monitoring and Evaluation phase or if the PA diagnosis is resolved.

Collaboration and Referral of Nutrition Care

The Coordination and Referral of Nutrition Care by a Nutrition Professional is part of the Intervention step that is especially important with regard to PA guidance (eNCPT) (Dietetics). As stated previously, the patient/client may need to be referred to a physician/primary care provider for medical clearance prior to initiating PA as determined by the ACSM Preparticipation Screening Guidelines or the PAR-Q+. The patient/client may need to be referred to a certified exercise professional for a fitness assessment, exercise prescription, and/or a more detailed exercise plan for health or disease management. The RDN may need to communicate this with the patient/client as part of the coordination of care and referral process.

Examples of Coordination of Care, specifically Collaboration and Referral of Nutrition Care, as part of the eNCPT, can include:

- Taking the ACSM Preparticipation Screening Guidelines form to the physician/primary care provider
- Referring to a RDN with expertise in PA guidance, like a CSSD
- Making an appointment with a certified exercise professional
• Obtaining a fitness assessment
• Developing an individualized exercise program by obtaining an exercise prescription from a certified exercise professional
• Initiating the PA plan prescribed by the certified exercise professional.

Examples of SMART goals include:

• I will call 3 certified exercise professionals on the list provided by the RDN on Wednesday.
• I will choose one to make an appointment with next week for consultation and an individualized exercise program.

Qualified Health and Fitness Professionals

Exercise certifications are not all equal. Some require a degree with supervised practice hours and a rigorous exam while others can be earned through a simple internet course. The RDN should make the referral decision based on more than the term “certified” in the title. Rather, the referral decision should be based on the type of certification and level of supervision needed for the patient/client. The level of supervision is determined by whether the patient/client needed PA clearance from their physician/primary care provider. It is highly recommended that the RDN refer patients only to exercise professionals who have been certified by an organization whose certification programs have been accredited through NCCA, such as the American Council on Exercise (ACE), the American College of Sports Medicine (ACSM), the National Academy of Sports Medicine (NASM), or the National Strength and Conditioning Association (NSCA).

To be most effective in making referrals, have a list available of local certified exercise professionals that you can share with the patient/client. RDNs can locate appropriately certified exercise professionals in their area by searching the individual organization's web site, determining the types of conditions the exercise professional is qualified with which to work, and interviewing the certified exercise professionals to ensure that they are comfortable and willing to work with the RDN's population of patients/clients. In addition, RDNs may verify an exercise professionals NCCA accredited certifications across multiple organizations (e.g., ACE, ACSM, and NSCA) simultaneously through the United States Registry of Exercise Professionals.

Alternatively, an RDN may consider becoming a certified exercise professional through an organization whose certification programs have been accredited through the NCCA. Increasingly, RDNs are earning certifications such as those described below to enhance their competency and expand their area of practice. RDNs who are certified to prescribe exercise are advised to carry liability insurance appropriate for that role.

The following are examples of ACSM health exercise certifications and clinical certifications. Additional information on these and other ACSM certifications can be obtained at the ACSM Certification website.

• Certified clinical exercise professionals are equivalent to an ACSM-Certified Clinical Exercise Physiologist® (ACSM-CEP®). Clinical exercise physiologists have a bachelor's degree in exercise physiology and 1,200 hours of clinical exercise experience or a master's in clinical exercise physiology and 600 hours of clinical exercise experience.
• The ACSM Clinical Exercise Physiologist is proficient in:
  • Working with individuals referred by or currently under the care of a physician/primary care provider.
  • Working with individuals with, but not limited to, cardiovascular, pulmonary, metabolic, orthopedic, musculoskeletal, neuromuscular, oncologic, immunologic and hematologic diseases.
  • Selecting and administering clinical exercise tests and analyzing the resultant data.
  • Developing individualized exercise prescription to support a variety patient/client needs, abilities, goals, and environment (e.g., home-based, facility-based, virtual). Assess patient/client goals, needs and objectives based on health and exercise history, motivation level and physical activity readiness.
  • Promoting adoption and adherence to healthy behaviors by applying effective behavioral strategies and motivational techniques.

• ACSM-Certified Exercise Physiologist® (ACSM-EP®) are advanced exercise professionals who prescribe exercise for health populations and those with controlled disease. ACSM-EP have a minimum of a bachelor’s degree in exercise science. For other organizations, a health fitness professional is typically equivalent to an ACSM-EP®.
  • The ACSM-Certified Exercise Physiologist (ACSM-EP) is proficient in:
    • Identifying cardiovascular, pulmonary, or metabolic risk factors or conditions that may require consultation with medical personnel through processes.
    • Selecting and administer appropriate fitness assessments and interpreting the resultant data.
    • Developing individualized exercise prescriptions (e.g., flexibility, muscular strength, muscular endurance, balance, agility, reaction time) for apparently healthy clients and those with controlled disease.
    • Modify exercise technique and/or exercise program based on ability and environmental conditions.
    • Optimize adoption and adherence of exercise and other healthy behaviors by applying effective behavioral strategies and motivational techniques.

• ACSM-Certified Personal Trainer® (ACSM-CPT®) and ASCM-Certified Group Exercise Instructor (ACSM-GEI®) are exercise professionals who have completed a certification exam.
  • The ACSM Certified Personal Trainer® is proficient in:
    • Developing and implement exercise programs for apparently healthy individuals or those who have medical clearance to exercise.
    • Leading and demonstrating safe and effective methods of exercise
    • Appropriately modifying an exercise or exercise program based on changing goals, needs, or ability.
    • Motivating individuals to begin and to maintain their healthy behaviors.
The ACSM Certified Group Exercise Instructor® (ACSM-GEI®) is proficient in:

- Developing and implementing safe and effective exercise programs for apparently healthy individuals or those who have medical clearance to exercise.
- Leading and demonstrating safe and effective methods of exercise.
- Modifying exercise programs for a variety of setting and group sizes.
- Motivating groups to begin and to maintain with their healthy behaviors.

Collaboration for Optimal Patient/Client Care

The biggest challenge for patients/clients is obtaining appropriate referrals and resources. Finding a certified exercise professional may be confusing for patients/clients. It is important to assist patients/clients in this process to locate the most appropriate certified exercise professional and start a patient/client on a PA program in a timely manner. This service emphasizes the importance of teamwork among health professionals in providing optimal care for patients/clients.

How detailed the RDN wishes to make a referral list is a personal choice. Keep in mind that the patient/client is most apt to follow advice if it is easy and convenient. Collaboration with other health professionals aids in not only achieving a unified and cohesive plan to maximize patient/client outcomes, it also often results in new referrals to the RDN.

In addition to a referral list of different types of appropriately certified exercise professionals, developing a list of PA resources available in the local community may also be beneficial. The list may include items such as the following:

- Web sites that provide information on local events or the local chamber of commerce
- Parks and recreation departments that provide PA classes or opportunities for PA
- National and state parks in the RDN's local area
- List of trails and hiking locations including their intensity ratings
- Local activity clubs (e.g., walking, biking, softball, basketball, dance, hiking, swimming, flag football, skiing, snowboarding, snowshoeing, ice skating, rock climbing, event-specific training, skill building, martial arts).
- Large community spaces (e.g., zoos, museums, shopping malls, aquariums) that serve other purposes but provide opportunities for walking
- Local and national fitness facilities that are appropriate for the patient/client and to whom the RDN provides services. These may include facilities that specialize in enhanced athletic skills and athletic performance

Collaboration and referral is an inexpensive marketing strategy and may promote the role of the RDN. Referrals can lead to partnerships whereby the RDN and the certified exercise professional have exposure to each other’s clientele, working together to provide the best plan of care for the patient/client.
In summary, the Nutrition Intervention must align with the Nutrition Diagnosis. Within the eNCPT the diagnostic terms, is the Behavioral-Environmental domain. This includes the Knowledge and Beliefs and/or Physical Activity and Function class of diagnostic terms. The Nutrition Intervention incorporates the Nutrition Education, Nutrition Counseling and/or Coordination of Care by a Nutrition Professional Domain(s). Other considerations are the motivator(s) of the patient/client, the importance of PA, perceived benefits and barriers of performing regular PA, and what brought the patient/client to seek RDN guidance. Although this information is collected in Nutrition Assessment, it is beneficial to reflect upon the issues in Nutrition Intervention.

**Nutrition Monitoring and Evaluation**

The fourth and final step in the NCP is Monitoring and Evaluation. According to the eNCPT: “The purpose of nutrition monitoring and evaluation is to determine and measure the amount of progress made for the nutrition intervention and whether the nutrition related goals/expected outcomes are being met. The aim is to promote more uniformity within the dietetics profession in assessing the effectiveness of nutrition intervention. Nutrition Monitoring and Evaluation identifies outcomes/indicators relevant to the diagnosis and nutrition intervention plans and goals.

During the first interaction, appropriate outcomes/indicators are selected to be monitored and evaluated at the next interaction. During subsequent interactions, these outcomes/indicators are used to demonstrate the amount of progress made and whether the goals or expected outcomes are being met. Factors to consider when selecting indicators are the medical diagnosis, health care outcomes, client goals, nutrition quality management goals, practice setting, client population, and
disease state and/or severity."

The Nutrition Intervention is based on the diagnosis and etiology from the PES statement, and the client-driven goals and motivators for change. The goals and expected outcomes the RDN stated in the Intervention step identify the indicators to measure at the follow-up visit. Evidence-based guidelines for nutrition and dietetics practice are used for recommended times for follow-up, and recommended outcome indicators for various conditions. Depending on the goals set, this step may require communication with the certified exercise professional or the physician/primary care provider to whom the patient/client may have been referred.

To assess compliance and goal achievement with PA intervention, it is important to know what type and how much PA a patient/client has engaged in since the previous visit. Other indicators or outcomes that might be relevant to PA interventions include the following:

- Changes in Body Mass Index (BMI, kg/m²), lean body mass, or fat free mass
- Current PA habits
- Readiness to change
- Self-image
- Self-efficacy
- Knowledge/beliefs/attitude

In the Monitoring step, it is important to determine that the intervention strategy is still relevant to the values, motivator(s), and needs of the patient/client. New information is often presented by the patient/client at follow-up visits. The patient/client may indicate a move into a different stage of readiness to change, or changes to perceived consequences, risks, benefits or self-efficacy with minimal or no PA being evident.

The RDN should evaluate the new information, document another Nutrition Assessment, and consider whether a new Nutrition Diagnosis is needed. It is also a critical time to address challenges and obstacles and work with the patient/client on appropriate resolutions. The intervention learning phase identifies patient/client workable strategies and notes barriers to be discussed. Associated terminology used in the Nutrition Monitoring and Evaluation step can be found in the eNCPT.
Physical Activity Intervention Examples

The following are examples of PA interventions utilizing the NCP and PES statements. The emphasis in the examples is on PA. It is implied that the patients/clients described in the examples have been cleared for independent activity by the physician/primary care provider or based on answers to ACSM’s Preparticipation Screening Guidelines or PAR-Q+. In addition, the prioritized PA-related Nutrition Diagnosis(es) and PA-related Nutrition Interventions are appropriate for the patient/client. The letters and numbers in parenthesis refer to the electronic Nutrition Care Process Terminology (eNCPT) codes.

Additionally, assume that RDNs have used the appropriate resources discussed in Chapter 2 to assess their individual scope of practice and have determined that they possess the required knowledge, skills, and competencies to provide PA guidance, to patients/clients within their individual and legal, if applicable, scope of practice.

Examples Demonstrating Detailed use of Nutrition Care Process in Physical Activity.

Example 1: Adding Exercise for Weight Management and Improved Health Status.

The RDN has an apparently healthy patient/client who is in the contemplation stage of change and whose main motivator for weight loss is improved health status to potentially increase their longevity and improve quality of life with the family. The RDN previously wrote the PES statement “Overweight/obesity related to lack of knowledge of proper energy balance as evidenced by sitting most of the day and energy intake exceeding needs with an inactive lifestyle.”
An intervention could include:

- Nutrition Education-Content (1), Physical activity guidance (E-1.3): Use the EIM handouts appropriate for discussing the benefits of exercise:
  - Sit Less. Move More.
  - Being Active for a Better Life
  - Being Active as We Get Older
  - Being Active with Your Young Child

- Nutrition Education-Content (1), Physical activity guidance (E-1.3): Use the ACSM’s EIM handout Being Active for a Healthy Weight.

- Use Motivational Interviewing techniques to conduct patient/client-led discussion of pros and cons of exercise.

- Conduct patient/client-led discussion in which patient/client identifies specific short-term goals and actions for attaining the 2018 PA Guidelines for Americans of 150 minutes of moderate-intensity PA per week within 3 months.

- Referral to other providers (RC-1.5): Refer to a certified exercise professional for fitness assessment and exercise prescription if client wishes to have a more detailed exercise regimen or if they wish to do vigorous-intensity PA.

Patient/client goals:
I will complete a list of pros and cons to beginning an exercise program (if not discussed) (See Appendix 5).

  - I will track actual PA against short-term plans and goals.
  - I will participate in 15 minutes of active play to include tag, jump rope, and hula hoop with my kids at least 3 days per week.
  - I will go to XYZ fitness facility and explore the offerings and cost of family membership.
  - I will make an appointment with my RDN in 2-4 weeks.

Expected outcome(s) by next session:
Increased knowledge of personal pros and cons of PA.
Review of resources available for PA.
Review cost of family member fitness center membership.
Example 2: Weight Loss to Improve Mobility

The RDN has a patient/client whose main motivator for weight loss is improved mobility to have improved quality of life when actively traveling. The patient/client is in the contemplation stage of change secondary to fear of injury, and for whom the RDN has written the PES statement “Physical inactivity related to severe joint pain secondary to obesity as evidenced by medical history.”

An intervention could include the following:

- Nutrition Education-Content (1), Physical activity guidance (E-1.3): Use the EIM handouts appropriate for discussing the benefits of exercise:
  - Sit Less. Move More.
  - Being Active for a Better Life
  - Being Active as We Get Older
  - Being Active with Your Young Child

- Nutrition Education-Content (1), Physical activity guidance (E-1.3): Use the EIM handouts Being Active with Mobility Limitations and Being Active When You Have Arthritis

- Referral to other providers (RC-1.5): Recommendation to seek a referral to a physical therapist or a referral to a certified exercise professional such as an ACSM Registered Clinical Exercise Physiologist® (RCEP) (Appendix 2 and 3)

Patient/client goals:

I will make an appointment with a certified exercise professional from the list provided by my RDN within 2-4 weeks.

- I will make an appointment with my RDN for follow-up on weight management in 2-4 weeks.

Expected outcome(s) by next session:

- Increased knowledge of how to be PA with arthritis.

- At least one meeting with a certified exercise professional knowledgeable about arthritis.
Examples demonstrating follow-up intervention and monitoring/evaluation related to physical activity.

The following are examples of appropriate PA intervention for RDNs to use with the patients/clients in providing PA guidance in following the recommendations of the 2018 Physical Activity Guidelines for Americans. These examples of Nutrition Interventions and subsequent Monitoring/Evaluation presume a follow-up visit with a Nutrition Assessment and Nutrition Diagnoses occurring during prior visits or if the Nutrition Assessment and Nutrition Diagnoses was done by another RDN or health practitioner (e.g., the subsequent RDN may have been requested to perform the Nutrition Intervention or Monitoring/Evaluation step by the physician/primary care provider or nurse/practitioner).

Example 3: Healthy male patient/client wants to prevent heart disease by improving lifestyle choices.

He does not have any pre-existing cardiac or metabolic health diagnosis or current symptoms and has been engaged in walking for 3 months, 45 minutes 3 days each week for 3 months.

- The RDN can discuss the 2018 Physical Activity Guidelines for Americans to explain that additional benefits may be obtained by increasing to 300 minutes of PA each week.
- The RDN and patient/client can have a conversation about a realistic amount of PA that will fit into the patient’s/client’s schedule and set a goal for the amount decided.
- The RDN can discuss incorporating resistance exercises into the PA regimen 1-2 days per week based on the 2018 Physical Activity Guidelines for Americans.
- The RDN can assess and discuss PA goals and plans at subsequent visits.

Example 4: A female patient with a current BMI of 31 kg/m2, type 2 diabetes, joint pain and PA clearance for unsupervised PA from her physician/primary care provider, has been seeing an RDN for several months. On this visit, the patient/client announces she is ready to begin an exercise program and has saved enough money to join a fitness facility.

- The RDN can provide education on the 2018 Physical Activity Guidelines for Americans and help the patient/client set a goal to begin PA active during the next week.
- The RDN can provide the patient/client a list of fitness facilities and qualified exercise professionals who may be a good fit considering the patient’s/client’s needs.
- The RDN can help the patient/client decide if a PA program, such as walking or biking (an activity of similar intensity to the patient’s/client’s interest) would complement her membership in the fitness facility to achieve the recommendations in the 2018 Physical Activity Guidelines for Americans.
- The RDN can discuss the importance of beginning a PA program slowly to avoid injury and maintain motivation.
- The RDN can assess and discuss PA goals and plans at subsequent visits.
Monitoring and Evaluation Examples

The following are examples of appropriate PA Monitoring and Evaluation for RDN’s to use with their patients/clients in providing general guidance in following the recommendations of the 2018 Physical Activity Guidelines for Americans.

Example 5: Excessive Exercise

The RDN has a patient/client whose main motivator for change is a desire to feel energized and at a “normal” weight. Along with several PES statements related to disordered eating patterns, the PA related PES statement is as follows: “Underweight related to excessive exercise as evidenced by patient/client comments.”

The nutrition intervention established included the following:

- 2-week follow up with the RDN
- Planned scale back of exercise by 2 days per week
- Exercise journal to include perceived energy level on a 1-10 scale

The patient/client returns two weeks later and reports on scaled back exercise the first week by two days and the second week by one day and provides a detailed log including fears of weight gain. The patient/client reports daily weights as “normal” and clothes fit also as “normal”.

The evaluation concludes the patient/client adhered to the Nutrition Intervention with a frequency of 50%, adhered to journaling and follow up appointment by 100%, but is still in need of Nutrition Intervention based on knowledge and beliefs of exercise benefits and education surrounding over-use of exercise. A new Nutrition Intervention is established to refer the patient/client to a qualified mental health practitioner whose practice includes assessment and counseling of individuals who exhibit disturbances in eating and PA.

Monitoring is established for two weeks.
Example 6: Healthy Eating to Reduce Cholesterol

The RDN has a patient/client who initiated the RDN visit for healthy eating to reduce blood cholesterol. The patient’s/client’s main motivator for change is a desire to feel energized and to manage stress. During the Assessment step of the NCP the patient/client revealed a high-fat food intake via a 4-day food diary, no PA above baseline and elevated Low Density Lipoprotein (LDL)-cholesterol. The PES statement related to PA was “Not ready for diet/lifestyle change related to lack of PA as evidenced by patient’s/client’s activity log.”

The intervention established included:

- 2-week follow up with the RDN
- A comprehensive nutrition education on the evidence-based benefits of PA and healthy eating for reducing blood cholesterol and improving heart health (provided at the previous visit).
- Walking 10 minutes during her lunch hour four days per week.
- Recording PA in a journal to include energy level on a 1-10 scale.

The patient/client returns in four weeks and reports walking 15 minutes during lunch the first two weeks and walking 20–30 minutes during lunch over the past two weeks. Detailed log shows notes revealing elevated energy levels, decreased stress and improved sleep. The patient/client has returned for guidance on ways to incorporate more and various PA or exercise into her life.

The evaluation concludes the patient/client adhered to the Nutrition Intervention and increased knowledge and awareness of the individual benefits of PA and exercise. The patient is clearly in the preparation stage of change. Further Nutrition Intervention could include referral to a qualified, certified exercise professional, a variety of community-based fitness and recreation activities (from the list of resources that the RDN previously developed) and follow up in one month’s time.

If patient/client has multiple Nutrition Diagnoses and will continue seeing the RDN for these, the RDN may still monitor PA levels and stage of change related to PA.
Summary

PA is beneficial for just about everybody – young and old, big and small, and well and ill. The 2018 Physical Activity Guidelines for Americans encourage adults to engage in at least 150-300 minutes of moderate-intensity or 75 minutes of vigorous-intensity PA per week. People with limitations to meeting this goal are encouraged to participate in as much PA as reasonably possible since some PA is better than none. Additional benefits, such as weight management, may occur with PA levels beyond the basic PA Guidelines.

The Physical Activity Toolkit for RDNs: Utilizing Resources of Exercise is Medicine® was designed in collaboration with the ACSM’s Exercise is Medicine® initiative and incorporates the NCP to assist RDNs in providing safe and effective PA guidance to their patients/clients based on the recommendations provided in the 2018 Physical Activity Guidelines for Americans, and in referring patients/clients to qualified, certified exercise professionals when a personalized exercise prescription and/or supervised activity is requested or recommended by the patient’s/client’s physician/primary care provider. The Toolkit is designed to help RDNs become confident and comfortable when providing PA guidance, and to utilize appropriate resources for providing quality care when assessing and counseling their patients/clients about PA.

Since RDNs are ethically and legally responsible for practicing within their individual scope of practice, RDNs are advised to use a self-evaluation process to assess the degree to which they personally have the required knowledge, skills, and demonstrated competence to provide PA guidance to the patients/clients. Using the 2018 Physical Activity Guidelines for Americans, in coordination with their food and nutrition expertise, RDNs are well positioned to assist patients/clients in integrating PA guidance with food and nutrition services in the promotion of health and well-being and in the prevention and treatment of chronic disease and other conditions that impact health.

RDNs working in diverse settings (inpatient and outpatient clinical settings, private practice, wellness organizations/programs, community organizations, and public health) undoubtedly counsel a variety of patients/clients who would benefit from increased PA to meet their health goals. Thus, RDN are encouraged to obtain the necessary knowledge, skills and competencies to provide safe and effective PA guidance to patients/clients, and to gain confidence in referring patients/clients to certified exercise professionals when appropriate. Alternatively, an RDN may consider becoming a certified exercise professional through an organization whose certification programs have been accredited by the NCCA. RDNs who have achieved certified exercise professional status, including being qualified to prescribe exercise, are advised to carry liability insurance appropriate for that role.
Chapter 4: Case Studies

Case studies allow the RDN to practice the application of the various elements of this toolkit to client situations. The cases are presented using a sample progress note that adheres to the Nutrition Care Process.

Scope of Practice

The Academy encourages RDNs to use the evaluation process provided by the Scope of Practice for the Registered Dietitian Nutritionist, including the Scope of Practice Decision Algorithm to assess the degree to which they individually have the required knowledge, skills, and competence to provide physical activity (PA) guidance to patients/clients settings and circumstances.

Disclaimers: The focus of these five case studies is PA, therefore Diagnosis, Intervention, and Monitoring and Evaluation related to nutritional status are not included. However, in practice, there would be at least one nutrition-related Diagnosis, Intervention, and Monitoring and Evaluation prioritized with the PA-related Diagnosis, Intervention, and Monitoring and Evaluation. Here are the five case studies presented in this chapter.

1. S.A. – Patient/client with overweight with a BMI of 29 kg/m2
2. J.P. – Patient/client with several cardiovascular disease risk factors
3. K.T. – Patient/client who is interested in sports performance enhancement
4. M.S. – Patient/client with obesity with a BMI of >40 kg/m2
5. J.R. – Patient/client with type 2 diabetes

Case Set-up

• This is the first visit with the patient/client. The RDN has spent 30 minutes establishing rapport, determining the patient/clients’ motivators for change, taking a 24-hour dietary recall, medical history, the EIM Summary Sheet, and the EIM Physical Activity Vital Sign, and completing the steps in the Nutrition Assessment.
• All terms from the eNCPT are in BOLD
Case Tasks
Use the progress note, professional experience, information in this toolkit, and clinical judgment to complete the following tasks. Although there will be additional diagnoses, interventions, and monitoring and evaluation related to nutrition, the focus of these case studies is the component of intervention related to physical activity guidance.

Nutrition Diagnosis Step:
Identify which of the PA-related nutrition diagnosis(es) labels apply to the patient/client. Pay close attention to the information provided in the Nutrition Assessment section.
For each selected Nutrition Diagnosis label, write one or more Nutrition Diagnosis statements using the PES format (Problem, Etiology, Signs and Symptoms). That is, “Diagnosis label (problem area) related to etiology (cause or contributing risk factor) as evidence by signs and symptoms (defining characteristics).” For example:
“Physical inactivity related to severe joint pain secondary to obesity as evidenced by patient/client’s reported use of motorized cart when shopping.”

Nutrition Intervention Step:
If more than one Nutrition Diagnosis is identified, prioritize the Nutrition Diagnoses based on the opportunity for PA guidance. Next, select specific intervention strategies that focus on the etiologies of the problems identified. The sample Progress Note shows the Nutrition Interventions from the eNCPT that are most relevant to PA.
Determine the goal and expected outcomes, amount of change (if applicable) and timeline for each intervention strategy you select. Consider biochemical, anthropometric, physical, and/or food and nutrition goals/outcomes or indicators expected to occur before the next visit.
Remember, referral to a physician for medical clearance or to a certified exercise professional is an intervention.

Nutrition Monitoring and Evaluation Step:
Identify appropriate plans to follow-up with the patient/client.
Refer to end of this document for completed progress notes for each case study presented.
CASE STUDY 1: Patient/client with BMI of 29 kg/m²

Initial Progress Note

Name: __S. A.__  Age: __62__  Referring physician: __T. Smith__

Nutrition Assessment

Client History Overview

- S.A. has a history of excess weight for 25+ years and previously was diagnosed with binge eating disorder not otherwise specified. Patient has utilized professional services of a RDN and medically supervised weight loss program enlisting a MD and RDN to assist in lifestyle change and change relationship with food.

- Client suffers from clinical depression and regularly sees a certified mental health professional for treatment. She is retired, although volunteers frequently. She has been married for 33 years; she lives with her husband in an upscale retirement community. Her husband recently overcame a bout of illness, initially thought to be recurrence of pancreatic cancer, resulting in increased stress for the patient.

- Although patient has had overweight or obesity her entire adult life, she has been physically active, with a preference for running to maintain health and weight. She has completed numerous half-marathons and a full marathon in 2018. In April 2018, the patient injured her back, fracturing several lumbar vertebrae, stabilization fusion L5/S1 with recommendation to stop running. The injury is healed, but medical recommendation to avoid running or pounding activities currently remains. She states that when she runs, she can control “everything” including eating. She maintains a detailed diet journal including caloric intake. She has followed the MD advice, but her weight is steadily increasing with decreased intensity of training.
### Client History

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<th>Age:</th>
<th>62</th>
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<tbody>
<tr>
<td>Gender:</td>
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### Patient/Client/Family/Health History

<table>
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<th>Patient/client chief nutrition complaint:</th>
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<tbody>
<tr>
<td>Musculoskeletal:</td>
<td>Spinal injury (stable)</td>
</tr>
<tr>
<td>Psychological:</td>
<td>Diagnosis of Binge Eating Disorder</td>
</tr>
</tbody>
</table>

### Social History

<table>
<thead>
<tr>
<th>Socioeconomic factors:</th>
<th>Financially Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living housing situation:</td>
<td>Lives with Husband</td>
</tr>
</tbody>
</table>

### Food/Nutrition-Related History

Based on 24-hour recall:

<table>
<thead>
<tr>
<th>Total energy estimated intake in 24 hours:</th>
<th>Estimated fat intake: 22% kcal from FAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1450 kcal/day</td>
<td>Estimated carbohydrate intake: 48% of energy (kcal) from dietary Carbohydrate (CHO)</td>
</tr>
<tr>
<td></td>
<td>Estimated protein intake: 30% of energy (kcal) from dietary protein (PRO)</td>
</tr>
</tbody>
</table>
Physical Activity

Physical Activity:
☐ Not currently physically active.
☑ Physical activity is as follows:

<table>
<thead>
<tr>
<th>Type of Physical Activity</th>
<th>Walk</th>
<th>Swim</th>
<th>Resistance Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (times/week)</td>
<td>1-2</td>
<td>1-2</td>
<td>2</td>
</tr>
<tr>
<td>Duration (minutes/day)</td>
<td>30</td>
<td>30</td>
<td>Varies</td>
</tr>
<tr>
<td>Total Minutes Per Week</td>
<td>60 max</td>
<td>60 max</td>
<td>Varies</td>
</tr>
<tr>
<td>Intensity (low, moderate, or high)</td>
<td>Low/moderate</td>
<td>Low/moderate</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Meeting current Physical Activity Guidelines: ☐ Yes ☑ No
(At least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity per week or combination of moderate- and vigorous-intensity and 2 days per week muscle-strengthening activities)

TV/screen time: 7 hours per week

Physical Activity Clearance for independent exercise:
☑ Yes
☐ No
☐ Pending clearance from physician

Readiness to change nutrition-related behaviors:
☐ Pre-contemplation (not thinking about being physically active)
☐ Contemplation (thinking about being active; not doing any physical activity)
☑ Preparation (intending to change soon or doing some physical activity)
☐ Action (meeting the Physical Activity Guidelines but for less than 6 months)
☐ Maintenance (meeting the Physical Activity Guidelines for more than 6 months)
Biochemical, Medical Tests, and Procedures

Fasting Blood Sample

<table>
<thead>
<tr>
<th>Lipid Profile/Pertinent Labs</th>
<th>Reference</th>
<th>Initial</th>
<th>6 months</th>
<th>8 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cholesterol (mg/dL)</td>
<td>&lt;200</td>
<td>211</td>
<td>180</td>
<td>207</td>
<td>212</td>
</tr>
<tr>
<td>LDL ☑ calculated ☐ direct (mg/dL)</td>
<td>&lt;100</td>
<td>101</td>
<td>68</td>
<td>111</td>
<td>122</td>
</tr>
<tr>
<td>HDL (mg/dL)</td>
<td>&gt;40</td>
<td>66</td>
<td>99</td>
<td>89</td>
<td>76</td>
</tr>
<tr>
<td>TG (mg/dL)</td>
<td>&lt;150</td>
<td>213</td>
<td>67</td>
<td>36</td>
<td>69</td>
</tr>
<tr>
<td>Glucose (mg/dL)</td>
<td>&lt;100</td>
<td>107</td>
<td>96</td>
<td>122</td>
<td>100</td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>&lt;5.6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg)</td>
<td>&lt;120</td>
<td>147</td>
<td>132</td>
<td>140</td>
<td>117</td>
</tr>
<tr>
<td>Diastolic blood pressure (mmHg)</td>
<td>&lt;80</td>
<td>71</td>
<td>75</td>
<td>78</td>
<td>70</td>
</tr>
</tbody>
</table>

Anthropometric Measurements

| Stated height: 62.5in                          | Body Mass Index (BMI): 29.7 (kg/m2) |
| Stated weight: 165lb                            | Waist circumference: 28 in          |

Weight change

<table>
<thead>
<tr>
<th>Date</th>
<th>Initial</th>
<th>4 months</th>
<th>6 months</th>
<th>8 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (lb.)</td>
<td>211.1</td>
<td>152</td>
<td>140</td>
<td>155</td>
<td>165</td>
</tr>
<tr>
<td>BMI (kg/m2)</td>
<td>41.2</td>
<td>29.6</td>
<td>27.3</td>
<td>27.8</td>
<td>29.6</td>
</tr>
</tbody>
</table>

Comparative Standards

Method for estimating total energy needs: Measured Resting Metabolic Rate (RMR): 1300 kcal/day
Total estimated energy needs in 24 hours: 1690 kcal/day (RMR x Physical Activity Level)
Nutrition Diagnosis

The following are possible nutrition and PA-related Nutrition Diagnoses. The assessment is not limited to using these diagnoses. Prioritize diagnoses.

☐ Food- and nutrition-related knowledge deficit (NB-1.1)
☐ Not ready for diet/lifestyle change (NB-1.3)
☐ Self-monitoring deficit (NB-1.4)
☐ Disordered eating pattern (NB-1.5)
☐ Physical inactivity (NB-2.1)
☐ Excessive physical activity (NB-2.2)
☐ Inability to manage self-care (NB-2.3)
☐ Poor nutrition quality of life (NB-2.5)
☐ Underweight (NC-3.1)
☐ Overweight/obesity (NC-3.3)

Nutrition Diagnosis Statements

Nutrition diagnosis (problem), related to etiology as evidenced by Signs/Symptoms:

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Related To</th>
<th>As Evidenced By</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Nutrition Intervention

Categories of Nutrition Interventions:
Food and/or Nutrient Delivery (not applicable for physical activity-related interventions)

Nutrition Education
☐ Nutrition Education- Content (E-1.1-1.3)
☐ Nutrition Education- Application (E-2.1-2.3)

Nutrition Counseling
☐ Theoretical Basis/Approach (C-1.1-1.5)
☐ Strategies (C-2.1-2.11)

Coordination of Nutrition Care by a Nutrition Professional
☐ Collaboration and Referral of Nutrition Care (RC-1.1-1.6)
☐ Discharge and Transfer of Nutrition Care to a New Setting or Provider (RC-2.1-2.3)

Intervention #1: ________________________________________________________________
Goals/Expected Outcome: _________________________________________________________

Intervention #2: ________________________________________________________________
Goals/Expected Outcome: _________________________________________________________

Intervention #3: ________________________________________________________________
Goals/Expected Outcome: _________________________________________________________

Educational Materials:
☐ Sit Less. Move More.
☐ Being Active as We Get Older
☐ Decisional Balance worksheet
☐ Being Active for a Better Life
☐ EIM RX for Health: ____________________________
☐ Guide to Using Step Counters or Fitness Tracker
☐ Community Resources handout
☐ Other: ________________________________________________________________
## Monitoring and Evaluation

Recommend f/u with RDN in ___________  ☐ week(s)  ☐ month(s)  ☐ PRN: ____________________

Recommend f/u with a certified exercise professional

- ☐ Physical activity (FH-7.3.1-FH-7.3.11)
  - ☐ Consistency (FH-7.3.2)
  - ☐ Frequency (FH-7.3.3)
  - ☐ Duration (FH-7.3.4)
  - ☐ Intensity (FH-7.3.5)
  - ☐ Type of physical activity (FH-7.3.6)
  - ☐ Strength (FH-7.3.8)
  - ☐ TV/screen time (FH-7.3.8)
  - ☐ Other sedentary activity time (FH-7.3.9)

- ☐ Energy Intake (1.1.1)

- ☐ Weight (AD-1.1.2.1-1.1.2.2)

- ☐ Body mass index (BMI) (AD-1.1.5.1)
CASE STUDY 2: Patient/client with several cardiovascular disease risk factors

Initial Progress Note

Name: J.P.  Age: 50  Referring physician: T. Smith

Disclaimer: Read disclaimers for this case found at the beginning of the case studies.

Nutrition Assessment

Client History Overview

- J.P. is a 50 year old male who wants to make lifestyle changes. He attended a worksite employee health fair and was told that his blood pressure was high. After a follow-up visit with his physician, he also learned that his blood lipids were abnormal.

- Both of his grandfathers died of heart attacks in their late 60s. Both grandfathers were “meat and potatoes” folks and were physically inactive, and one grandfather smoked. J.P. has been reading a lot and learned that losing weight and exercise may help him reduce his risk of developing CVD.

- J.P. is an accountant and has a very sedentary job. He has not been physically active since high school and wants to begin a “diet” and exercise program. He has been watching a reality TV show on weight loss and likes the idea of making those types of fitness gains in a short time. He has seen on the show that problems with blood lipids and blood pressure just “go away” if you work hard enough.

- J.P. does not like to cook and eats most of his meals at a restaurant/fast food establishment or takes food home from these places. He is thinking of having pre-packaged “weight loss meals” delivered to his home, but is worried about the taste of them.
# Client History

<table>
<thead>
<tr>
<th>Age:</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender:</td>
<td>Male</td>
</tr>
</tbody>
</table>

# Patient/Client/Family/Health History

<table>
<thead>
<tr>
<th>Patient/client chief nutrition complaint:</th>
<th>Hyperlipidemia, hypertension, weight gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musculoskeletal:</td>
<td>no known issues/concerns</td>
</tr>
<tr>
<td>Physical observations:</td>
<td>acanthosis nigricans</td>
</tr>
<tr>
<td>Psychological:</td>
<td>no known issues/concerns</td>
</tr>
</tbody>
</table>

# Social History

<table>
<thead>
<tr>
<th>Socioeconomic factors:</th>
<th>Financially Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living housing situation:</td>
<td>lives alone, doesn't like to cook</td>
</tr>
</tbody>
</table>

# Food/Nutrition-Related History

Based on 24-hour recall:

<table>
<thead>
<tr>
<th>Total energy estimated intake in 24 hours:</th>
<th>3150 kcal/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated fat intake:</td>
<td>35% of energy (kcal) from FAT</td>
</tr>
<tr>
<td>Estimated carbohydrate intake:</td>
<td>50% of energy (kcal) from dietary Carbohydrate (CHO)</td>
</tr>
<tr>
<td>Estimated protein intake:</td>
<td>15% of energy (kcal) from dietary protein (PRO)</td>
</tr>
</tbody>
</table>
### Physical Activity

**Physical Activity:**
- ☑ Not currently physically active.
- ☐ Physical activity is as follows:

<table>
<thead>
<tr>
<th>Type of Physical Activity</th>
<th>Frequency (times/week)</th>
<th>Duration (minutes/day)</th>
<th>Total Minutes Per Week</th>
<th>Intensity (low, moderate, or high)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Meeting current Physical Activity Guidelines:** ☐ Yes ☑ No

(At least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity per week or combination of moderate- and vigorous-intensity and 2 days per week muscle-strengthening activities)

**TV/screen time:** 12 hours per week

**Physical Activity Clearance for independent exercise:**
- ☑ Yes
- ☐ No
- ☐ Pending clearance from physician

**Readiness to change nutrition-related behaviors:**
- ☐ Pre-contemplation (not thinking about being physically active)
- ☐ Contemplation (thinking about being active; not doing any physical activity)
- ☑ Preparation (intending to change soon or doing some physical activity)
- ☐ Action (meeting the Physical Activity Guidelines but for less than 6 months)
- ☐ Maintenance (meeting the Physical Activity Guidelines for more than 6 months)
Biochemical, Medical Tests, and Procedures

Fasting Blood Sample

<table>
<thead>
<tr>
<th>Lipid Profile/Pertinent Labs</th>
<th>Reference</th>
<th>Initial</th>
<th>6 months</th>
<th>8 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cholesterol (mg/dL)</td>
<td>&lt;200</td>
<td>278</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LDL</td>
<td>☐</td>
<td>239</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDL (mg/dL)</td>
<td>&gt;40</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG (mg/dL)</td>
<td>&lt;150</td>
<td>337</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glucose (mg/dL)</td>
<td>&lt;100</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>&lt;5.6</td>
<td>Unknown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg)</td>
<td>&lt;120</td>
<td>170</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diastolic blood pressure (mmHg)</td>
<td>&lt;80</td>
<td>102</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Anthropometric Measurements

Stated height: 70in

Body Mass Index (BMI): 33.3 (kg/m²)

Stated weight: 232lb

Waist circumference: 41.5 in

Weight change

Gained approximately 50 pounds over the last 10 years

<table>
<thead>
<tr>
<th>Date</th>
<th>Initial</th>
<th>4 months</th>
<th>6 months</th>
<th>8 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (lb.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| | | | | | |
| | | | | | |
| BMI (kg/m2) |

Comparative Standards

Method for estimating total energy needs: Measured Resting Metabolic Rate (RMR): 2200 kcal/day

Total estimated energy needs in 24 hours: 2860 kcal/day (RMR x Physical Activity Level)
Nutrition Diagnosis

The following are possible nutrition and PA-related Nutrition Diagnoses. The assessment is not limited to using these diagnoses. Prioritize diagnoses.

☐ Food- and nutrition-related knowledge deficit (NB-1.1)
☐ Not ready for diet/lifestyle change (NB-1.3)
☐ Self-monitoring deficit (NB-1.4)
☐ Disordered eating pattern (NB-1.5)
☐ Physical inactivity (NB-2.1)
☐ Excessive physical activity (NB-2.2)
☐ Inability to manage self-care (NB-2.3)
☐ Poor nutrition quality of life (NB-2.5)
☐ Underweight (NC-3.1)
☐ Overweight/obesity (NC-3.3)

Nutrition Diagnosis Statements

Nutrition diagnosis (problem), related to etiology as evidenced by Signs/Symptoms:

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Related To</th>
<th>As Evidenced By</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Nutrition Intervention

Categories of Nutrition Interventions:
Food and/or Nutrient Delivery (not applicable for physical activity-related interventions)

Nutrition Education
☐ Nutrition Education- Content (E-1.1-1.3)
☐ Nutrition Education- Application (E-2.1-2.3)

Nutrition Counseling
☐ Theoretical Basis/Approach (C-1.1-1.5)
☐ Strategies (C-2.1-2.11)

Coordination of Nutrition Care by a Nutrition Professional
☐ Collaboration and Referral of Nutrition Care (RC-1.1-1.6)
☐ Discharge and Transfer of Nutrition Care to a New Setting or Provider (RC-2.1-2.3)

Intervention #1: _____________________________________________________________
Goals/Expected Outcome: _______________________________________________________________

Intervention #2: _____________________________________________________________
Goals/Expected Outcome: _______________________________________________________________

Intervention #3: _____________________________________________________________
Goals/Expected Outcome: _______________________________________________________________

Educational Materials:
☐ Sit Less. Move More.
☐ Being Active as We Get Older
☐ Decisional Balance worksheet
☐ Being Active for a Better Life
☐ EIM RX for Health: ____________________________
☐ Guide to Using Step Counters or Fitness Tracker
☐ Community Resources handout
☐ Other: _______________________________________________________________
Monitoring and Evaluation

Recommend f/u with RDN in ____________ ☐ week(s) ☐ month(s) ☐ PRN: ____________________

Recommend f/u with a certified exercise professional

☐ Physical activity (FH-7.3.1-FH-7.3.11)
  ☐ Consistency (FH-7.3.2)
  ☐ Frequency (FH-7.3.3)
  ☐ Duration (FH-7.3.4)
  ☐ Intensity (FH-7.3.5)
  ☐ Type of physical activity (FH-7.3.6)
  ☐ Strength (FH-7.3.8)
  ☐ TV/screen time (FH-7.3.8)
  ☐ Other sedentary activity time (FH-7.3.9)

☐ Energy Intake (1.1.1)
☐ Weight (AD-1.1.2.1-1.1.2.2)
☐ Body mass index (BMI) (AD-1.1.5.1)
CASE STUDY 3: Patient/client who is interested in sports performance enhancement

Initial Progress Note

Name:  K.T.  Age:  30  Referring physician:  T. Smith

Disclaimer: Read disclaimers for this case found at the beginning of the case studies.

Nutrition Assessment

Client History Overview

- K.T. is a 30 year old woman who has gained approximately 15 pounds since she started graduate school 3 years ago. She began running 7 months ago to lose weight and is now training for a half marathon that takes place in 3 months.

- K.T. completes 30 minutes of speed intervals on Mondays and Thursdays at 4:00 pm. She runs for 60 minutes on Tuesdays, Wednesdays, and Fridays at 4:00 pm. She completes her long runs (10 miles/2 hours) on Saturday mornings and rests on Sunday.

- K.T. recently began to “count calories”. She eats breakfast every day (~500 kcals) since she heard this is the most important meal, and lunch between 11:00 and noon (~700 kcals). She is busy with homework in the evening after her run and usually eats a high protein “sports bar” (~300 kcals) because they are supposed to be a good post-workout snack and the chocolate/peanut butter flavored ones are such a treat.

- K.T. has noticed lately that her running seems to be getting more difficult. She thought training was supposed to make you more fit, but she is having trouble getting through those workouts.
### Client History

| Age: 30 | Gender: Female |

### Patient/Client/Family/Health History

| Patient/client chief nutrition complaint: | weight gain of 15 lbs, decreased exercise performance |
| Musculoskeletal: | no known issues/concerns |

### Social History

| Socioeconomic factors: | Financially Stable |
| Living housing situation: | Lives with 1 roommate |

### Food/Nutrition-Related History

Based on 24-hour recall:

| Total energy estimated intake in 24 hours: 1500 kcal/day | Estimated fat intake: 35% of energy (kcal) from FAT  
Estimated carbohydrate intake: 45% of energy (kcal) from dietary Carbohydrate (CHO)  
Estimated protein intake: 20% of energy (kcal) from dietary protein (PRO) |
Physical Activity

Physical Activity:
☐ Not currently physically active.
☑ Physical activity is as follows:

<table>
<thead>
<tr>
<th>Type of Physical Activity</th>
<th>Running</th>
<th>Strength Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (times/week)</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Duration (minutes/day)</td>
<td>30 min/d on speed days (2x week); 60 min/d on endurance days (3x week); 1 20 min/d on long run day (1x week)</td>
<td></td>
</tr>
<tr>
<td>Total Minutes Per Week</td>
<td>360</td>
<td>20 – 40</td>
</tr>
<tr>
<td>Intensity (low, moderate, or high)</td>
<td>Low on long run days; moderate on endurance days; high on speed days</td>
<td></td>
</tr>
</tbody>
</table>

Meeting current Physical Activity Guidelines: ☐ Yes ☑ No
(At least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity per week or combination of moderate- and vigorous-intensity and 2 days per week muscle-strengthening activities)

TV/screen time: ___8___ hours per week

Physical Activity Clearance for independent exercise:
☑ Yes
☐ No
☐ Pending clearance from physician

Readiness to change nutrition-related behaviors:
☐ Pre-contemplation (not thinking about being physically active)
☐ Contemplation (thinking about being active; not doing any physical activity)
☐ Preparation (intending to change soon or doing some physical activity)
☐ Action (meeting the Physical Activity Guidelines but for less than 6 months)
☑ Maintenance (meeting the Physical Activity Guidelines for more than 6 months)
Biochemical, Medical Tests, and Procedures

Fasting Blood Sample

<table>
<thead>
<tr>
<th>Lipid Profile/Pertinent Labs</th>
<th>Reference</th>
<th>Initial</th>
<th>6 months</th>
<th>8 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cholesterol (mg/dL)</td>
<td>&lt;200</td>
<td>Normal (NL)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LDL □ calculated □ direct (mg/dL)</td>
<td>&lt;100</td>
<td>NL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDL (mg/dL)</td>
<td>&gt;40</td>
<td>NL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG (mg/dL)</td>
<td>&lt;150</td>
<td>NL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glucose (mg/dL)</td>
<td>&lt;100</td>
<td>68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>&lt;5.6</td>
<td>NL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg)</td>
<td>&lt;120</td>
<td>NL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diastolic blood pressure (mmHg)</td>
<td>&lt;80</td>
<td>NL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Anthropometric Measurements

Stated height: 64in

Stated weight: 145lb

Body Mass Index (BMI): 25.1 (kg/m²)

Waist circumference: 31 in

Measured % body fat: 32%

Weight change

<table>
<thead>
<tr>
<th>Date</th>
<th>Initial</th>
<th>4 months</th>
<th>6 months</th>
<th>8 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (lb.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI (kg/m2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comparative Standards

Method for estimating total energy needs: Measured Resting Metabolic Rate (RMR): 1437 kcal/day

Total estimated energy needs in 24 hours: 2315 kcal/day (RMR x Physical Activity Level)
## Nutrition Diagnosis

The following are possible nutrition and PA-related Nutrition Diagnoses. The assessment is not limited to using these diagnoses. Prioritize diagnoses.

- Food- and nutrition-related knowledge deficit (NB-1.1)
- Not ready for diet/lifestyle change (NB-1.3)
- Self-monitoring deficit (NB-1.4)
- Disordered eating pattern (NB-1.5)
- Physical inactivity (NB-2.1)
- Excessive physical activity (NB-2.2)
- Inability to manage self-care (NB-2.3)
- Poor nutrition quality of life (NB-2.5)
- Underweight (NC-3.1)
- Overweight/obesity (NC-3.3)

### Nutrition Diagnosis Statements

Nutrition diagnosis (problem), related to etiology as evidenced by Signs/Symptoms:

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Related To</th>
<th>As Evidenced By</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Nutrition Intervention

Categories of Nutrition Interventions:
Food and/or Nutrient Delivery (not applicable for physical activity-related interventions)

Nutrition Education
☐ Nutrition Education- Content (E-1.1-1.3)
☐ Nutrition Education- Application (E-2.1-2.3)

Nutrition Counseling
☐ Theoretical Basis/Approach (C-1.1-1.5)
☐ Strategies (C-2.1-2.11)

Coordination of Nutrition Care by a Nutrition Professional
☐ Collaboration and Referral of Nutrition Care (RC-1.1-1.6)
☐ Discharge and Transfer of Nutrition Care to a New Setting or Provider (RC-2.1-2.3)

Intervention #1: ____________________________________________
Goals/Expected Outcome: ____________________________________________
Intervention #2: ____________________________________________
Goals/Expected Outcome: ____________________________________________
Intervention #3: ____________________________________________
Goals/Expected Outcome: ____________________________________________

Educational Materials:
☐ Sit Less. Move More.
☐ Being Active as We Get Older
☐ Decisional Balance worksheet
☐ Being Active for a Better Life
☐ EIM RX for Health: ________________________
☐ Guide to Using Step Counters or Fitness Tracker
☐ Community Resources handout
☐ Other: ________________________________________________
Monitoring and Evaluation

Recommend f/u with RDN in ____________  ☐ week(s)  ☐ month(s)  ☐ PRN: ____________________

Recommend f/u with a certified exercise professional

☐ Physical activity (FH-7.3.1-FH-7.3.11)
  ☐ Consistency (FH-7.3.2)
  ☐ Frequency (FH-7.3.3)
  ☐ Duration (FH-7.3.4)
  ☐ Intensity (FH-7.3.5)
  ☐ Type of physical activity (FH-7.3.6)
  ☐ Strength (FH-7.3.8)
  ☐ TV/screen time (FH-7.3.8)
  ☐ Other sedentary activity time (FH-7.3.9)

☐ Energy Intake (1.1.1)

☐ Weight (AD-1.1.2.1-1.1.2.2)

☐ Body mass index (BMI) (AD-1.1.5.1)
CASE STUDY 4: Patient/client with BMI of >40 kg/m²

Initial Progress Note

<table>
<thead>
<tr>
<th>Name:</th>
<th>Age:</th>
<th>Referring physician:</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.S.</td>
<td>45</td>
<td>T. Smith</td>
</tr>
</tbody>
</table>

Disclaimer: Read disclaimers for this case found at the beginning of the case studies.

**Nutrition Assessment**

Client History Overview

- M.S. has a history since age 13 of ulcerative colitis, s/p ileostomy & pouch, lumbar DJD, cervical spondylosis, hypercholesterolemia- resolved with dietary intervention, obesity, s/p sleeve gastrectomy surgery 10 years ago; pernicious anemia; possible bipolar d/o; s/p panniculectomy one year ago; MVA (motorcycle) 6 months ago; fractured tibia with rod stability, fractured navicular.

- Client began psycho-social therapy after achieving maximal weight loss. Depakote and Topamax prescribed s/p dx bipolar disorder ~2 years ago. Changed therapist in one year ago- meds changed and patient now expresses renewed interest in his structured health, but in a ‘normal’ way.

- Client reports minimal family history of obesity. He is on disability secondary to back issues and has a supportive partner. Client states that initially pre and s/p bariatric surgery he was very focused and maintained a very rigid pattern of exercise for 1-2 hours daily, cooking all meals at home, and feeling empowered. Once medication initiated, patient states a decrease in structure and ‘obsession’ about regimen of nutrition and PA, however he maintained a healthy lifestyle and activity level until his accident. He states that several weeks prior to his accident, he had just finished building a home gym. Patient verbalized frustration about weight gain at all medical appointments, as noted in medical records.

- Client has just finished and been released from physical therapy and patient is ‘anxious’ to get back to old routines. He states he feels a good weight is 190-220 pounds, the higher as he desires to build upper body muscle mass. Patient further states previous drive to reach ‘normal BMI’ but in reflection feels that the lower BMI wasn’t ‘healthy’ for him and he experienced negative side effects such as dizziness.
## Client History

| Age:  45  | Gender:  Male |

## Patient/Client/Family/Health History

| Patient/client chief nutrition complaint: | obesity with weight re-gain |
| Medical history: | ulcerative colitis, s/p ileostomy & pouch; hypercholesterolemia; s/p sleeve gastrectomy surgery 10 years ago; pernicious anemia |
| Musculoskeletal: | DJD, cervical spondylosis; s/p MVA: fractured tibia with rod stability, fractured navicular |
| Psychological: | bi-polar disorder |

## Social History

| Socioeconomic factors: | Financially Well Situated |
| Living housing situation: | Lives with partner |

## Food/Nutrition-Related History

Based on 24-hour recall:

| Total energy estimated intake in 24 hours: | Estimated fat intake: 20% of energy (kcal) from FAT |
| 1500 – 1800 kcal/day | Estimated carbohydrate intake: 55% of energy (kcal) from dietary Carbohydrate (CHO) |
| | Estimated protein intake: 25% of energy (kcal) from dietary protein (PRO) |
Physical Activity

Physical Activity:

☐ Not currently physically active.
☑ Physical activity is as follows:

<table>
<thead>
<tr>
<th>Type of Physical Activity</th>
<th>Physical Therapy Routine – including resistance exercises</th>
<th>Stationary Bike</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (times/week)</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Duration (minutes/day)</td>
<td>30-45</td>
<td>15–20</td>
</tr>
<tr>
<td>Total Minutes Per Week</td>
<td>60-90</td>
<td>60-80</td>
</tr>
<tr>
<td>Intensity (low, moderate, or high)</td>
<td>Low/moderate</td>
<td>Low</td>
</tr>
</tbody>
</table>

Meeting current Physical Activity Guidelines: ☐ Yes ☑ No
(At least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity per week or combination of moderate- and vigorous-intensity and 2 days per week muscle-strengthening activities)

TV/screen time: ___10___ hours per day
Prior to MVA, patient/client was very active, sitting only ~ 3-4 hours daily.

Physical Activity Clearance for independent exercise:

☐ Yes
☐ No
☑ Pending clearance from orthopedic physician for resistance training – when discharged from physical therapy in one week.

Readiness to change nutrition-related behaviors:

☐ Pre-contemplation (not thinking about being physically active)
☐ Contemplation (thinking about being active; not doing any physical activity)
☐ Preparation (intending to change soon or doing some physical activity)
☑ Action (meeting the Physical Activity Guidelines but for less than 6 months)
☐ Maintenance (meeting the Physical Activity Guidelines for more than 6 months)
Biochemical, Medical Tests, and Procedures

Fasting Blood Sample

<table>
<thead>
<tr>
<th>Lipid Profile/Pertinent Labs</th>
<th>Reference</th>
<th>Initial</th>
<th>8 months</th>
<th>12 months</th>
<th>14 months</th>
<th>26 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cholesterol (mg/dL)</td>
<td>&lt;200</td>
<td>251</td>
<td>128</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LDL</td>
<td>&lt;100</td>
<td>138</td>
<td>53</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDL (mg/dL)</td>
<td>&gt;40</td>
<td>44</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG (mg/dL)</td>
<td>&lt;150</td>
<td>223</td>
<td>139</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glucose (mg/dL)</td>
<td>&lt;100</td>
<td>122</td>
<td>105</td>
<td>98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>&lt;5.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg)</td>
<td>&lt;120</td>
<td>145</td>
<td>140</td>
<td>115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diastolic blood pressure (mmHg)</td>
<td>&lt;80</td>
<td>82</td>
<td>76</td>
<td>76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other: Vit B12 pg/ML</td>
<td>180-900</td>
<td>145</td>
<td></td>
<td>232</td>
<td>315</td>
<td></td>
</tr>
</tbody>
</table>

Anthropometric Measurements

Stated height: 74in
Stated weight: 225lb
Body Mass Index (BMI): 30.2 (kg/m2)
Waist circumference: 36 in

Weight change

<table>
<thead>
<tr>
<th>Date</th>
<th>Initial</th>
<th>6 week</th>
<th>12 months</th>
<th>15 months</th>
<th>17 months</th>
<th>21 months</th>
<th>28 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (lb.)</td>
<td>324.9</td>
<td>304.9</td>
<td>225.3</td>
<td>181</td>
<td>188</td>
<td>191</td>
<td>225</td>
</tr>
<tr>
<td>BMI (kg/m2)</td>
<td>44.2</td>
<td>41.4</td>
<td>30.2</td>
<td>23.9</td>
<td>24.1</td>
<td>25.9</td>
<td>30.2</td>
</tr>
</tbody>
</table>

Comparative Standards

Method for estimating total energy needs: Measured Resting Metabolic Rate (RMR): 1700 kcal/day
Total estimated energy needs in 24 hours: 2200 kcal/day (RMR x Physical Activity Level)
Nutrition Diagnosis

The following are possible nutrition and PA-related Nutrition Diagnoses. The assessment is not limited to using these diagnoses. Prioritize diagnoses.

☐ Food- and nutrition-related knowledge deficit (NB-1.1)
☐ Not ready for diet/lifestyle change (NB-1.3)
☐ Self-monitoring deficit (NB-1.4)
☐ Disordered eating pattern (NB-1.5)
☐ Physical inactivity (NB-2.1)
☐ Excessive physical activity (NB-2.2)
☐ Inability to manage self-care (NB-2.3)
☐ Poor nutrition quality of life (NB-2.5)
☐ Underweight (NC-3.1)
☐ Overweight/obesity (NC-3.3)

Nutrition Diagnosis Statements

Nutrition diagnosis (problem), related to etiology as evidenced by Signs/Symptoms:

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Related To</th>
<th>As Evidenced By</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

79
Nutrition Intervention

Categories of Nutrition Interventions:
Food and/or Nutrient Delivery (not applicable for physical activity-related interventions)

Nutrition Education
- Nutrition Education- Content (E-1.1-1.3)
- Nutrition Education- Application (E-2.1-2.3)

Nutrition Counseling
- Theoretical Basis/Approach (C-1.1-1.5)
- Strategies (C-2.1-2.11)

Coordination of Nutrition Care by a Nutrition Professional
- Collaboration and Referral of Nutrition Care (RC-1.1-1.6)
- Discharge and Transfer of Nutrition Care to a New Setting or Provider (RC-2.1-2.3)

Intervention #1: ________________________________________________________________
Goals/Expected Outcome: _______________________________________________________

Intervention #2: ________________________________________________________________
Goals/Expected Outcome: _______________________________________________________

Intervention #3: ________________________________________________________________
Goals/Expected Outcome: _______________________________________________________

Educational Materials:
- Sit Less. Move More.
- Being Active as We Get Older
- Decisional Balance worksheet
- Being Active for a Better Life
- EIM RX for Health: _______________________
- Guide to Using Step Counters or Fitness Tracker
- Community Resources handout
- Other: ________________________________
Monitoring and Evaluation

Recommend f/u with RDN in ____________ ☐ week(s) ☐ month(s) ☐ PRN: ____________________

Recommend f/u with a certified exercise professional

☐ Physical activity (FH-7.3.1-FH-7.3.11)
  ☐ Consistency (FH-7.3.2)
  ☐ Frequency (FH-7.3.3)
  ☐ Duration (FH-7.3.4)
  ☐ Intensity (FH-7.3.5)
  ☐ Type of physical activity (FH-7.3.6)
  ☐ Strength (FH-7.3.8)
  ☐ TV/screen time (FH-7.3.8)
  ☐ Other sedentary activity time (FH-7.3.9)

☐ Energy Intake (1.1.1)
☐ Weight (AD-1.1.2.1-1.1.2.2)
☐ Body mass index (BMI) (AD-1.1.5.1)
CASE STUDY 5

Initial Progress Note

Name: J.R.  Age: 48  Referring physician: T. Smith

Disclaimer: Read disclaimers for this case found at the beginning of the case studies.

Nutrition Assessment

Client History Overview

- J.R. diagnoses: Type 2 diabetes, HTN, obesity, metabolic syndrome, severe dyslipidemia, severe hypertriglyceridemia, obstructive sleep apnea and depression.
- PT admits to a problem with alcohol to ‘feel better’.
- Diabetes diagnosed in 11 years ago. Client was initially treated with metformin but was transitioned to oral meds/insulin secondary to reported 20 pound weight gain. Until recently he took Glimepiride 4 mg/ daily (recently d/c secondary to weight gain).
- Current medications include: Hydrochlorothiazide-lisinipril 12.5 – 20 mg/ daily; lodipine 5 mg/ daily; metformin-sitagliptin 50mg/500mg daily; humolog 8 u; lantus 2 u and as directed; 500 mg fish oil capsule daily. Client checks BG 3-4 times/day; values have been in the range of 140 – 260 mg/dL over the past month. Prior, BG was reported 240 –400 mg/dL. Client reports 2 weekends ago he went camping and ate healthy (less protein and more fiber/ fruits/ vegetables) and did not need supplemental insulin and most noteworthy BG were WNL.
- At a recent visit to the endocrinologist and CDE patient had his feet examined with signs of peripheral neuropathy present. Diabetic retinopathy was not found. He had small amounts of albumin in his urine.
### Client History

| Age: 48 | Gender: Male |

### Patient/Client/Family/Health History

| **Patient/client chief nutrition complaint:** | obesity type 2 diabetes, hypertriglyceridemia, hypertension, metabolic syndrome, weight gain |
| **Musculoskeletal:** | peripheral neuropathy |
| **Psychological:** | depression |
| **Physical findings:** | acanthosis nigricans |

### Social History

| **Socioeconomic factors:** | Financially Stable |
| **Living housing situation:** | Lives with wife and 2 children |

### Food/Nutrition-Related History

**Based on 24-hour recall:**

| **Total energy estimated intake in 24 hours:** 2800 kcal/day | Estimated fat intake: 30% of energy (kcal) from FAT  
Estimated carbohydrate intake: 45% of energy (kcal) from dietary Carbohydrate (CHO)  
Estimated protein intake: 25% of energy (kcal) from dietary protein (PRO) |
**Physical Activity**

**Physical Activity:**
- ☐ Not currently physically active.
- ☑ Physical activity is as follows:

<table>
<thead>
<tr>
<th>Type of Physical Activity</th>
<th>Hiking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (times/week)</td>
<td>1</td>
</tr>
<tr>
<td>Duration (minutes/day)</td>
<td>60</td>
</tr>
<tr>
<td>Total Minutes Per Week</td>
<td>60</td>
</tr>
<tr>
<td>Intensity (low, moderate, or high)</td>
<td>Moderate/high</td>
</tr>
</tbody>
</table>

**Meeting current Physical Activity Guidelines:**  ☑ Yes  ☐ No

(At least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity per week or combination of moderate- and vigorous-intensity and 2 days per week muscle-strengthening activities)

**TV/screen time:** 7.5 hours per day

**Physical Activity Clearance for independent exercise:**
- ☑ Yes
- ☐ No
- ☐ Pending clearance from orthopedic physician for resistance training – when discharged from physical therapy in one week.

**Readiness to change nutrition-related behaviors:**
- ☐ Pre-contemplation (not thinking about being physically active)
- ☐ Contemplation (thinking about being active; not doing any physical activity)
- ☑ Preparation (intending to change soon or doing some physical activity)
- ☐ Action (meeting the Physical Activity Guidelines but for less than 6 months)
- ☐ Maintenance (meeting the Physical Activity Guidelines for more than 6 months)
Biochemical, Medical Tests, and Procedures

Fasting Blood Sample

<table>
<thead>
<tr>
<th>Lipid Profile/Pertinent Labs</th>
<th>Reference</th>
<th>Initial</th>
<th>3 months</th>
<th>6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cholesterol (mg/dL)</td>
<td>&lt;200</td>
<td>316</td>
<td>198</td>
<td>175</td>
</tr>
<tr>
<td>LDL</td>
<td>&lt;100</td>
<td>—</td>
<td>N/A</td>
<td>148</td>
</tr>
<tr>
<td>HDL (mg/dL)</td>
<td>&gt;40</td>
<td>5</td>
<td>21</td>
<td>25</td>
</tr>
<tr>
<td>TG (mg/dL)</td>
<td>&lt;150</td>
<td>894</td>
<td>322</td>
<td>250</td>
</tr>
<tr>
<td>Glucose (mg/dL)</td>
<td>&lt;100</td>
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<td>191</td>
<td>109</td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>&lt;5.6</td>
<td></td>
<td>7.1</td>
<td>6.0</td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg)</td>
<td>&lt;120</td>
<td></td>
<td>120</td>
<td>118</td>
</tr>
<tr>
<td>Diastolic blood pressure (mmHg)</td>
<td>&lt;80</td>
<td></td>
<td>82</td>
<td>77</td>
</tr>
</tbody>
</table>

Anthropometric Measurements

Stated height: __70.5in__

Body Mass Index (BMI): __36.1 (kg/m2)__

Stated weight: __254lb__

Waist circumference: __42 in__

Weight change

20 pound weight gain

<table>
<thead>
<tr>
<th>Date</th>
<th>Initial</th>
<th>6 week</th>
<th>12 months</th>
<th>15 months</th>
<th>17 months</th>
<th>21 months</th>
<th>28 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (lb.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI (kg/m2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comparative Standards

Method for estimating total energy needs: Measured Resting Metabolic Rate (RMR): 2075 kcal/day

Total estimated energy needs in 24 hours: 2698 kcal/day (RMR x Physical Activity Level)
Nutrition Diagnosis

The following are possible nutrition and PA-related Nutrition Diagnoses. The assessment is not limited to using these diagnoses. Prioritize diagnoses.

☐ Food- and nutrition-related knowledge deficit (NB-1.1)
☐ Not ready for diet/lifestyle change (NB-1.3)
☐ Self-monitoring deficit (NB-1.4)
☐ Disordered eating pattern (NB-1.5)
☐ Physical inactivity (NB-2.1)
☐ Excessive physical activity (NB-2.2)
☐ Inability to manage self-care (NB-2.3)
☐ Poor nutrition quality of life (NB-2.5)
☐ Underweight (NC-3.1)
☐ Overweight/obesity (NC-3.3)

Nutrition Diagnosis Statements

Nutrition diagnosis (problem), related to etiology as evidenced by Signs/Symptoms:

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Related To</th>
<th>As Evidenced By</th>
</tr>
</thead>
<tbody>
<tr>
<td>____________________________</td>
<td>___________________________</td>
<td>__________________</td>
</tr>
<tr>
<td>____________________________</td>
<td>___________________________</td>
<td>__________________</td>
</tr>
</tbody>
</table>
Nutrition Intervention

Categories of Nutrition Interventions:
Food and/or Nutrient Delivery (not applicable for physical activity-related interventions)

Nutrition Education
☐ Nutrition Education- Content (E-1.1-1.3)
☐ Nutrition Education- Application (E-2.1-2.3)

Nutrition Counseling
☐ Theoretical Basis/Approach (C-1.1-1.5)
☐ Strategies (C-2.1-2.11)

Coordination of Nutrition Care by a Nutrition Professional
☐ Collaboration and Referral of Nutrition Care (RC-1.1-1.6)
☐ Discharge and Transfer of Nutrition Care to a New Setting or Provider (RC-2.1-2.3)

Intervention #1: _____________________________________________________________
Goals/Expected Outcome: ______________________________________________________

Intervention #2: _____________________________________________________________
Goals/Expected Outcome: ______________________________________________________

Intervention #3: _____________________________________________________________
Goals/Expected Outcome: ______________________________________________________

Educational Materials:
☐ Sit Less. Move More.
☐ Being Active as We Get Older
☐ Decisional Balance worksheet
☐ Being Active for a Better Life
☐ EIM RX for Health: __________________________
☐ Guide to Using Step Counters or Fitness Tracker
☐ Community Resources handout
☐ Other: _________________________________________________________________
Monitoring and Evaluation

Recommend f/u with RDN in ____________  ☐ week(s)  ☐ month(s)  ☐ PRN: ____________________

Recommend f/u with a certified exercise professional

☐ Physical activity (FH-7.3.1-FH-7.3.11)
  ☐ Consistency (FH-7.3.2)
  ☐ Frequency (FH-7.3.3)
  ☐ Duration (FH-7.3.4)
  ☐ Intensity (FH-7.3.5)
  ☐ Type of physical activity (FH-7.3.6)
  ☐ Strength (FH-7.3.8)
  ☐ TV/screen time (FH-7.3.8)
  ☐ Other sedentary activity time (FH-7.3.9)

☐ Energy Intake (1.1.1)

☐ Weight (AD-1.1.2.1-1.1.2.2)

☐ Body mass index (BMI) (AD-1.1.5.1)
Chapter 5: Answers to Case Studies

Case studies allow the RDN to practice the application of the various elements of this toolkit to client situations. The cases are presented using a sample progress note that adheres to the Nutrition Care Process (NCP).

Scope of Practice
RDNs are ethically and legally responsible for practicing within their individual and legal, if applicable, scope of practice. The Academy encourages RDNs to use the evaluation process provided by the Scope of Practice for the Registered Dietitian Nutritionist, including the Scope of Practice Decision Algorithm to assess the degree to which the individual has the required knowledge, skills, and competence to provide physical activity guidance to patients/clients settings and circumstances.

Disclaimer: The focus of these case studies is physical activity, therefore Diagnosis, Intervention, and Monitoring and Evaluation related to nutritional status are not included. However, in practice, there would be at least one nutrition-related Diagnosis, Intervention, and Monitoring and Evaluation prioritized with the physical activity-related Diagnosis, Intervention, and Monitoring and Evaluation.

1. S.A. – Patient/client with overweight (BMI of 29 kg/m2)
2. J.P. – Patient/client who has several cardiovascular disease risk factors
3. K.T. – Patient/client who is interested in sports performance enhancement
4. M.S. – Patient/client with obesity (BMI of >40 kg/m2)
5. J.R. – Patient/client with type 2 diabetes

Case Set-up
This is the first visit with the patient/client. The RDN has spent 30 minutes establishing rapport, determining the patient/clients’ motivators for change, taking a 24-hour dietary recall, medical history, physical activity vital sign and completing the steps in the Nutrition Assessment.
Case Tasks
Use the progress note, professional experience, information in this toolkit, and clinical judgment to complete the following tasks. Although there will be additional diagnoses, interventions, and monitoring and evaluation related to nutrition, the focus of these case studies is the component of intervention related to physical activity guidance.

Nutrition Diagnosis Step:
1. Identify which of the physical activity-related nutrition diagnosis(es) labels apply to the patient/client. Pay close attention to the information provided in the Assessment section.
2. For each diagnosis label selected, write one or more nutrition diagnosis statements using the PES format (Problem, Etiology, Signs and Symptoms). That is, “Diagnosis label (problem area) related to etiology (cause or contributing risk factor) as evidence by signs and symptoms (defining characteristics).” For example: “Physical inactivity related to severe joint pain secondary to obesity as evidenced by patient/client’s reported use of motorized cart when shopping.”

Nutrition Intervention Step:
1. If more than one Nutrition Diagnosis is identified, prioritize the Nutrition Diagnoses based on the opportunity for PA guidance. Next, select specific intervention strategies that focus on the etiologies of the problems identified. The sample Progress Note shows the Nutrition Interventions from the eNCPT that are most relevant to PA.
2. Determine the goal and expected outcomes, amount of change (if applicable) and timeline for each intervention strategy you select. Consider biochemical, anthropometric, physical, and/or food and nutrition goals/outcomes or indicators that would be expected to occur before the next visit.
3. Remember, referral to a physician for medical clearance or to a certified fitness professional is an intervention.

Nutrition Monitoring and Evaluation Step:
1. Identify appropriate plans to follow-up with the patient/client.
CASE STUDY 1: Patient/client with BMI of 29 kg/m²

Initial Progress Note

Conducted by a RDN, who after reviewing the Scope of Practice for the Registered Dietitian Nutritionist, including the Scope of Practice Decision Algorithm, to assess knowledge and competencies, determined that the RDN did not possess fitness or exercise certification and did not have enough knowledge and training to provide education beyond the 2018 PA Guidelines.

Name: __ S. A. __ Age: __ 62 __ Referring physician: __ T. Smith __

Disclaimer: Read disclaimers for this case found at the beginning of the case studies.

Nutrition Assessment

Client History

Age: __ 62 __ Gender: __ Female __

Patient/Client/Family/Health History

<table>
<thead>
<tr>
<th>Patient/client chief nutrition complaint:</th>
<th>Weight Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musculoskeletal:</td>
<td>Spinal injury (stable)</td>
</tr>
<tr>
<td>Psychological:</td>
<td>Diagnosis of Binge Eating Disorder</td>
</tr>
</tbody>
</table>

Social History

<table>
<thead>
<tr>
<th>Socioeconomic factors:</th>
<th>Financially Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living housing situation:</td>
<td>Lives with Husband</td>
</tr>
</tbody>
</table>
## Food/Nutrition-Related History

Based on 24-hour recall:

<table>
<thead>
<tr>
<th>Total energy estimated intake in 24 hours:</th>
<th>Estimated fat intake:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1450 kcal/day</td>
<td>22% kcal from FAT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Estimated carbohydrate intake:</th>
<th>Estimated protein intake:</th>
</tr>
</thead>
<tbody>
<tr>
<td>48% of energy (kcal) from dietary Carbohydrate (CHO)</td>
<td>30% of energy (kcal) from dietary protein (PRO)</td>
</tr>
</tbody>
</table>

## Physical Activity

Physical Activity:

☐ Not currently physically active.
☑ Physical activity is as follows:

<table>
<thead>
<tr>
<th>Type of Physical Activity</th>
<th>Walk</th>
<th>Swim</th>
<th>Resistance Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (times/week)</td>
<td>1-2</td>
<td>1-2</td>
<td>2</td>
</tr>
<tr>
<td>Duration (minutes/day)</td>
<td>30</td>
<td>30</td>
<td>Varies</td>
</tr>
<tr>
<td>Total Minutes Per Week</td>
<td>60 max</td>
<td>60 max</td>
<td>Varies</td>
</tr>
<tr>
<td>Intensity (low, moderate, or high)</td>
<td>Low/moderate</td>
<td>Low/moderate</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Meeting current Physical Activity Guidelines:  ☐ Yes  ☑ No

(At least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity per week or combination of moderate- and vigorous-intensity and 2 days per week muscle-strengthening activities)

TV/screen time: 7 hours per week
Physical Activity Clearance for independent exercise:
☑ Yes
☐ No
☐ Pending clearance from physician

Readiness to change nutrition-related behaviors:
☐ Pre-contemplation (not thinking about being physically active)
☐ Contemplation (thinking about being active; not doing any physical activity)
☑ Preparation (intending to change soon or doing some physical activity)
☐ Action (meeting the Physical Activity Guidelines but for less than 6 months)
☐ Maintenance (meeting the Physical Activity Guidelines for more than 6 months)

Biochemical, Medical Tests, and Procedures

Fasting Blood Sample

<table>
<thead>
<tr>
<th>Lipid Profile/Pertinent Labs</th>
<th>Reference</th>
<th>Initial</th>
<th>6 months</th>
<th>8 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cholesterol (mg/dL)</td>
<td>&lt;200</td>
<td>211</td>
<td>180</td>
<td>207</td>
<td>212</td>
</tr>
<tr>
<td>LDL</td>
<td>&lt;100</td>
<td>101</td>
<td>68</td>
<td>111</td>
<td>122</td>
</tr>
<tr>
<td></td>
<td>☑ calculated</td>
<td>☐ direct (mg/dL)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDL (mg/dL)</td>
<td>&gt;40</td>
<td>66</td>
<td>99</td>
<td>89</td>
<td>76</td>
</tr>
<tr>
<td>TG (mg/dL)</td>
<td>&lt;150</td>
<td>213</td>
<td>67</td>
<td>36</td>
<td>69</td>
</tr>
<tr>
<td>Glucose (mg/dL)</td>
<td>&lt;100</td>
<td>107</td>
<td>96</td>
<td>122</td>
<td>100</td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>&lt;5.6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg)</td>
<td>&lt;120</td>
<td>147</td>
<td>132</td>
<td>140</td>
<td>117</td>
</tr>
<tr>
<td>Diastolic blood pressure (mmHg)</td>
<td>&lt;80</td>
<td>71</td>
<td>75</td>
<td>78</td>
<td>70</td>
</tr>
</tbody>
</table>

Anthropometric Measurements

Stated height: _62.5in_  Body Mass Index (BMI): _29.7 (kg/m2)_
Stated weight: _165lb_  Waist circumference: _28 in_
Weight change

<table>
<thead>
<tr>
<th>Date</th>
<th>Initial</th>
<th>4 months</th>
<th>6 months</th>
<th>8 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (lb.)</td>
<td>211.1</td>
<td>152</td>
<td>140</td>
<td>155</td>
<td>165</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>41.2</td>
<td>29.6</td>
<td>27.3</td>
<td>27.8</td>
<td>29.6</td>
</tr>
</tbody>
</table>

Comparative Standards

**Method for estimating total energy needs**: Measured Resting Metabolic Rate (RMR): 1300 kcal/day

**Total estimated energy needs in 24 hours**: 1690 kcal/day (RMR x Physical Activity Level)

**Nutrition Diagnosis**

The following are possible nutrition and PA-related Nutrition Diagnoses. The assessment is not limited to using these diagnoses. Prioritize diagnoses.

- Food- and nutrition-related knowledge deficit (NB-1.1)
- Not ready for diet/lifestyle change (NB-1.3)
- Self-monitoring deficit (NB-1.4)
- Disordered eating pattern (NB-1.5)
- **Physical inactivity (NB-2.1)**
- Excessive physical activity (NB-2.2)
- Inability to manage self-care (NB-2.3)
- Poor nutrition quality of life (NB-2.5)
- Underweight (NC-3.1)
- Overweight/obesity (NC-3.3)

**Nutrition Diagnosis Statements**

Nutrition diagnosis (problem), related to etiology as evidenced by Signs/Symptoms:

**Diagnosis**

- Physical inactivity

**Related To**

- Weekly activity at lower than PA Guidelines recommended

**As Evidenced By**

- Patients reported weekly physical activity
**Nutrition Intervention**

**Categories of Nutrition Interventions:**
Food and/or Nutrient Delivery (not applicable for physical activity-related interventions)

*Nutrition Education*
- ☐ Nutrition Education- Content (E-1.1-1.3)
- ✔ Nutrition Education- Application (E-2.1-2.3)

*Nutrition Counseling*
- ☐ Theoretical Basis/Approach (C-1.1-1.5)
- ✔ Strategies (C-2.1-2.11)

*Coordination of Nutrition Care by a Nutrition Professional*
- ✔ Collaboration and Referral of Nutrition Care (RC-1.1-1.6)
- ☐ Discharge and Transfer of Nutrition Care to a New Setting or Provider (RC-2.1-2.3)

**Intervention #1:** Nutrition Counseling Strategies: Utilize Motivational Interviewing, Trans Theoretical Model and Cognitive Behavior Therapy to recommend patient/client incrementally increase calories to meet measured energy requirements.

**Goals/Expected Outcome:** Patient/client will experience desired weight loss with modest increase in caloric intake and overcome food fears.

**Intervention #2:** Nutrition Education- Application: Discussed with patient the PA Guidelines, including sitting less and moving more. Recommend patient/client increase current PA by 30 minutes per week and utilize EIM tools for motivation and knowledge enhancement.

**Goals/Expected Outcome:** Patient/client verbally expresses understanding of guidelines and sets goal to increase physical activity 30 minutes per week and to utilize a Step Counter to monitor increasing base-line physical activity.

**Intervention #3:** Coordination of Nutrition Care: Refer patient/client to a fitness professional certified by a NCCA recognized organization and certified to work with patients/clients conditions.

**Goals/Expected Outcome:** Patient/client will meet with a health and fitness professional for tailored, specific exercise information to provide appropriate alternative higher intensity activity to running.

**Intervention #4:** Coordination of Nutrition Care: With patient/client permission, coordinate with patient’s/client’s therapist to continue working to alleviate food fears.

**Goals/Expected Outcome:** Coordinated efforts with therapist to meet patient/client needs.
Educational Materials:
☑ Sit Less. Move More.
☐ Being Active as We Get Older
☐ Decisional Balance worksheet
☐ Being Active for a Better Life
☐ EIM RX for Health: _______________________
☑ Guide to Using Step Counters or Fitness Tracker
☑ Community Resources handout
☐ Other: __________________________________________________________

Monitoring and Evaluation
Recommend f/u with RDN in _____2______ ☑ week(s) ☐ month(s) ☐ PRN: ____________________
Recommend f/u with a certified exercise professional
☑ Physical activity (FH-7.3.1-FH-7.3.11)
  ☐ Consistency (FH-7.3.2)
  ☐ Frequency (FH-7.3.3)
  ☑ Duration (FH-7.3.4)
  ☐ Intensity (FH-7.3.5)
  ☑ Type of physical activity (FH-7.3.6)
  ☐ Strength (FH-7.3.8)
  ☐ TV/screen time (FH-7.3.8)
  ☑ Other sedentary activity time (FH-7.3.9)
☑ Energy Intake (1.1.1)
☐ Weight (AD-1.1.2.1-1.1.2.2)
☐ Body mass index (BMI) (AD-1.1.5.1)
CASE STUDY 2: Patient/client with several cardiovascular disease risk factors

Initial Progress Note

Conducted by a RDN, who after reviewing the Scope of Practice for the Registered Dietitian Nutritionist, including the Scope of Practice Decision Algorithm, to assess knowledge and competencies, determined that the RDN did not possess fitness or exercise certification and did not have enough knowledge and training to provide education beyond the 2018 PA Guidelines.

Name: J.P.  Age: 50  Referring physician: T. Smith

Disclaimer: Read disclaimers for this case found at the beginning of the case studies.

Nutrition Assessment

Client History

Age: 50  Gender: Male

Patient/Client/Family/Health History

<table>
<thead>
<tr>
<th>Patient/client chief nutrition complaint:</th>
<th>Hyperlipidemia, hypertension, weight gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musculoskeletal:</td>
<td>no known issues/concerns</td>
</tr>
<tr>
<td>Physical observations:</td>
<td>acanthosis nigricans</td>
</tr>
<tr>
<td>Psychological:</td>
<td>no known issues/concerns</td>
</tr>
</tbody>
</table>

Social History

<table>
<thead>
<tr>
<th>Socioeconomic factors:</th>
<th>Financially Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living housing situation:</td>
<td>lives alone, doesn't like to cook</td>
</tr>
</tbody>
</table>
### Food/Nutrition-Related History

Based on 24-hour recall:

<table>
<thead>
<tr>
<th>Total energy estimated intake in 24 hours:</th>
<th>Estimated fat intake:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3150 kcal/day</td>
<td>35% of energy (kcal) from FAT</td>
</tr>
<tr>
<td></td>
<td>Estimated carbohydrate intake:</td>
</tr>
<tr>
<td></td>
<td>50% of energy (kcal) from dietary Carbohydrate (CHO)</td>
</tr>
<tr>
<td></td>
<td>Estimated protein intake:</td>
</tr>
<tr>
<td></td>
<td>15% of energy (kcal) from dietary protein (PRO)</td>
</tr>
</tbody>
</table>

### Physical Activity

**Physical Activity:**

☑ Not currently physically active.

☐ Physical activity is as follows:

<table>
<thead>
<tr>
<th>Type of Physical Activity</th>
<th>Frequency (times/week)</th>
<th>Duration (minutes/day)</th>
<th>Total Minutes Per Week</th>
<th>Intensity (low, moderate, or high)</th>
</tr>
</thead>
</table>

**Meeting current Physical Activity Guidelines:** ☐ Yes ☑ No

(At least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity per week or combination of moderate- and vigorous-intensity and 2 days per week muscle-strengthening activities)

**TV/screen time:** 12 hours per week
Physical Activity Clearance for independent exercise:
- ☑ Yes
- ☐ No
- ☐ Pending clearance from physician

Readiness to change nutrition-related behaviors:
- ☐ Pre-contemplation (not thinking about being physically active)
- ☐ Contemplation (thinking about being active; not doing any physical activity)
- ☑ Preparation (intending to change soon or doing some physical activity)
- ☐ Action (meeting the Physical Activity Guidelines but for less than 6 months)
- ☐ Maintenance (meeting the Physical Activity Guidelines for more than 6 months)

Biochemical, Medical Tests, and Procedures

Fasting Blood Sample

<table>
<thead>
<tr>
<th>Lipid Profile/Pertinent Labs</th>
<th>Reference</th>
<th>Initial</th>
<th>6 months</th>
<th>8 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cholesterol (mg/dL)</td>
<td>&lt;200</td>
<td>278</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LDL</td>
<td>&lt;100</td>
<td>239</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDL</td>
<td>&gt;40</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG (mg/dL)</td>
<td>&lt;150</td>
<td>337</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glucose (mg/dL)</td>
<td>&lt;100</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>&lt;5.6</td>
<td>Unknown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg)</td>
<td>&lt;120</td>
<td>170</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diastolic blood pressure (mmHg)</td>
<td>&lt;80</td>
<td>102</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Anthropometric Measurements

- Stated height: 70in
- Body Mass Index (BMI): 33.3 (kg/m²)
- Stated weight: 232lb
- Waist circumference: 41.5 in
Weight change

Gained approximately 50 pounds over the last 10 years

<table>
<thead>
<tr>
<th>Date</th>
<th>Initial</th>
<th>4 months</th>
<th>6 months</th>
<th>8 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (lb.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comparative Standards

Method for estimating total energy needs: Measured Resting Metabolic Rate (RMR): 2200 kcal/day
Total estimated energy needs in 24 hours: 2860 kcal/day (RMR x Physical Activity Level)

Nutrition Diagnosis

The following are possible nutrition and PA-related Nutrition Diagnoses. The assessment is not limited to using these diagnoses. Prioritize diagnoses.

☐ Food- and nutrition-related knowledge deficit (NB-1.1)
☐ Not ready for diet/lifestyle change (NB-1.3)
☐ Self-monitoring deficit (NB-1.4)
☐ Disordered eating pattern (NB-1.5)
☑ Physical inactivity (NB-2.1)
☐ Excessive physical activity (NB-2.2)
☐ Inability to manage self-care (NB-2.3)
☐ Poor nutrition quality of life (NB-2.5)
☐ Underweight (NC-3.1)
☐ Overweight/obesity (NC-3.3)

Nutrition Diagnosis Statements

Nutrition diagnosis (problem), related to etiology as evidenced by Signs/Symptoms:

Diagnosis | Related To | As Evidenced By
---|---|---
Physical inactivity | Related to sedentary job and preparation stage of readiness to | As evidenced by patient statements.
Nutrition Intervention

Categories of Nutrition Interventions:
Food and/or Nutrient Delivery (not applicable for physical activity-related interventions)

Nutrition Education
☑ Nutrition Education- Content (E-1.1-1.3)
☐ Nutrition Education- Application (E-2.1-2.3)

Nutrition Counseling
☐ Theoretical Basis/Approach (C-1.1-1.5)
☑ Strategies (C-2.1-2.11)

Coordination of Nutrition Care by a Nutrition Professional
☑ Collaboration and Referral of Nutrition Care (RC-1.1-1.6)
☐ Discharge and Transfer of Nutrition Care to a New Setting or Provider (RC-2.1-2.3)

Intervention #1: Nutrition Education- Content: Provide physical activity information per 2018 Physical Activity Guidelines.
Goals/Expected Outcome: Patient/client will verbally express understanding of the PA Guidelines.

Intervention #2: Nutrition Counseling: Use tools of EIM to explore activities that patient/client enjoys or would be willing to try.
Goals/Expected Outcome: Patient/client will identify 1-3 physical activity strategies patient/client is willing to try prior to next visit.

Intervention #3: Coordination of care: Refer patient/client to a health and fitness professional certified by a NCCA recognized organization.
Goals/Expected Outcome: Patient/client will meet with a health and fitness professional for tailored, specific exercise information.
Educational Materials:
☑ Sit Less. Move More.
☐ Being Active as We Get Older
☑ Decisional Balance worksheet
☐ Being Active for a Better Life
☑ EIM RX for Health: Blood Lipid Disorders
☐ Guide to Using Step Counters or Fitness Tracker
☑ Community Resources handout
☐ Other: __________________________________________________________

Monitoring and Evaluation
Recommend f/u with RDN in _____2______ ☑ week(s) ☐ month(s) ☐ PRN: ________________
Recommend f/u with a certified exercise professional
☑ Physical activity (FH-7.3.1-FH-7.3.11)
  ☑ Consistency (FH-7.3.2)
  ☑ Frequency (FH-7.3.3)
  ☑ Duration (FH-7.3.4)
  ☑ Intensity (FH-7.3.5)
  ☑ Type of physical activity (FH-7.3.6)
  ☑ Strength (FH-7.3.8)
  ☐ TV/screen time (FH-7.3.8)
  ☑ Other sedentary activity time (FH-7.3.9)

☐ TV/screen time (FH-7.3.8)
☐ Other sedentary activity time (FH-7.3.9)

☐ Energy Intake (1.1.1)
☐ Weight (AD-1.1.2.1-1.1.2.2)
☐ Body mass index (BMI) (AD-1.1.5.1)
CASE STUDY 3: Patient/client who is interested in sports performance enhancement

Initial Progress Note

Conducted by a RDN, who after reviewing the Scope of Practice for the Registered Dietitian Nutritionist, including the Scope of Practice Decision Algorithm, to assess knowledge and competencies, determined that the RDN did not possess fitness or exercise certification and did not have enough knowledge and training to provide education beyond the 2018 PA Guidelines.

Name: K.T.  Age: 30  Referring physician: T. Smith

Disclaimer: Read disclaimers for this case found at the beginning of the case studies.

Nutrition Assessment

Client History

Age: 30  Gender: Female

Patient/Client/Family/Health History

<table>
<thead>
<tr>
<th>Patient/client chief nutrition complaint:</th>
<th>weight gain of 15 lbs, decreased exercise performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musculoskeletal:</td>
<td>no known issues/concerns</td>
</tr>
</tbody>
</table>

Social History

<table>
<thead>
<tr>
<th>Socioeconomic factors:</th>
<th>Financially Stable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living housing situation:</td>
<td>Lives with 1 roommate</td>
</tr>
</tbody>
</table>
## Food/Nutrition-Related History

Based on 24-hour recall:

<table>
<thead>
<tr>
<th>Total energy estimated intake in 24 hours:</th>
<th>Estimated fat intake:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500 kcal/day</td>
<td>35% of energy (kcal) from FAT</td>
</tr>
<tr>
<td></td>
<td>Estimated carbohydrate intake:</td>
</tr>
<tr>
<td></td>
<td>45% of energy (kcal) from dietary Carbohydrate (CHO)</td>
</tr>
<tr>
<td></td>
<td>Estimated protein intake:</td>
</tr>
<tr>
<td></td>
<td>20% of energy (kcal) from dietary protein (PRO)</td>
</tr>
</tbody>
</table>

## Physical Activity

**Physical Activity:**

☐ Not currently physically active.

☑ Physical activity is as follows:

<table>
<thead>
<tr>
<th>Type of Physical Activity</th>
<th>Running</th>
<th>Strength Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (times/week)</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Duration (minutes/day)</td>
<td>30 min/d on speed days (2x week); 60 min/d on endurance days (3x week); 1 20 min/d on ong run day (1x week)</td>
<td></td>
</tr>
<tr>
<td>Total Minutes Per Week</td>
<td>360</td>
<td>20 – 40</td>
</tr>
<tr>
<td>Intensity (low, moderate, or high)</td>
<td>Low on long run days; moderate on endurance days; high on speed days</td>
<td></td>
</tr>
</tbody>
</table>

**Meeting current Physical Activity Guidelines:** ☐ Yes ☑ No

(At least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity per week or combination of moderate- and vigorous-intensity and 2 days per week muscle-strengthening activities)

**TV/screen time:** 8 hours per week
Physical Activity Clearance for independent exercise:

☑ Yes

☐ No

☐ Pending clearance from physician

Readiness to change nutrition-related behaviors:

☐ Pre-contemplation (not thinking about being physically active)

☐ Contemplation (thinking about being active; not doing any physical activity)

☐ Preparation (intending to change soon or doing some physical activity)

☑ Action (meeting the Physical Activity Guidelines but for less than 6 months)

☑ Maintenance (meeting the Physical Activity Guidelines for more than 6 months)

Biochemical, Medical Tests, and Procedures

Fasting Blood Sample

<table>
<thead>
<tr>
<th>Lipid Profile/Pertinent Labs</th>
<th>Reference</th>
<th>Initial</th>
<th>6 months</th>
<th>8 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cholesterol (mg/dL)</td>
<td>&lt;200</td>
<td>Normal (NL)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LDL</td>
<td>&lt;100</td>
<td>NL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDL (mg/dL)</td>
<td>&gt;40</td>
<td>NL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG (mg/dL)</td>
<td>&lt;150</td>
<td>NL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glucose (mg/dL)</td>
<td>&lt;100</td>
<td>68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>&lt;5.6</td>
<td>NL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg)</td>
<td>&lt;120</td>
<td>NL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diastolic blood pressure (mmHg)</td>
<td>&lt;80</td>
<td>NL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Anthropometric Measurements

Stated height: 64in

Stated weight: 145lb

Body Mass Index (BMI): 25.1 (kg/m²)

Waist circumference: 31 in

Measured % body fat: 32%
Weight change

<table>
<thead>
<tr>
<th>Date</th>
<th>Initial</th>
<th>4 months</th>
<th>6 months</th>
<th>8 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (lb.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comparative Standards

**Method for estimating total energy needs:** Measured Resting Metabolic Rate (RMR): 1437 kcal/day

**Total estimated energy needs in 24 hours:** 2315 kcal/day (RMR x Physical Activity Level)

**Nutrition Diagnosis**

The following are possible nutrition and PA-related Nutrition Diagnoses. The assessment is not limited to using these diagnoses. Prioritize diagnoses.

- Food- and nutrition-related knowledge deficit (NB-1.1)
- Not ready for diet/lifestyle change (NB-1.3)
- Self-monitoring deficit (NB-1.4)
- Disordered eating pattern (NB-1.5)
- Physical inactivity (NB-2.1)
- Excessive physical activity (NB-2.2)
- Inability to manage self-care (NB-2.3)
- Poor nutrition quality of life (NB-2.5)
- Underweight (NC-3.1)
- Overweight/obesity (NC-3.3)

**Nutrition Diagnosis Statements**

Nutrition diagnosis (problem), related to etiology as evidenced by Signs/Symptoms:

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Related To</th>
<th>As Evidenced By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate energy intake (NI-1.4)</td>
<td>Inadequate energy intake</td>
<td>Calorie intake (1,500 kcal) versus measured energy needs (2,325).</td>
</tr>
</tbody>
</table>
Categories of Nutrition Interventions:

Food and/or Nutrient Delivery (not applicable for physical activity-related interventions)

**Nutrition Education**
- ☑ Nutrition Education- Content (E-1.1-1.3)
- ☐ Nutrition Education- Application (E-2.1-2.3)

**Nutrition Counseling**
- ☐ Theoretical Basis/Approach (C-1.1-1.5)
- ☑ Strategies (C-2.1-2.11)

**Coordination of Nutrition Care by a Nutrition Professional**
- ☑ Collaboration and Referral of Nutrition Care (RC-1.1-1.6)
- ☐ Discharge and Transfer of Nutrition Care to a New Setting or Provider (RC-2.1-2.3)

**Intervention #1:** Nutrition Education- content: Discuss the importance of adequate energy and carbohydrate intake for exercise performance and recovery.

**Goals/Expected Outcome:** Patient/client verbally expresses understanding of adequate calories and carbohydrates to fuel exercise.

**Intervention #2:** Nutrition counseling strategies: Use of strategies including Motivational Interviewing, Cognitive Behavior Therapy and Positive Psychology theories to discuss benefits and risks of increasing calories and carbohydrates, the effects on performance and strategies for self-monitoring of quality and quantity of dietary intake.

**Goals/Expected Outcome:** Patient/client sets goal of self-monitoring of quality and quantity of dietary intake.

**Intervention #3:** Coordination of care: Provide patient/client with a list of community resources including local running groups and running coaches.

**Goals/Expected Outcome:** Patient/client trains with group one or more times each week.
Educational Materials:

☐ Sit Less. Move More.
☐ Being Active as We Get Older
☐ Decisional Balance worksheet
☐ Being Active for a Better Life
☐ EIM RX for Health: ______________________
☐ Guide to Using Step Counters or Fitness Tracker
☑ Community Resources handout
☐ Other: __________________________________________________________

Monitoring and Evaluation

Recommend f/u with RDN in _____2______ ☑ week(s) ☐ month(s) ☐ PRN: ____________________

Recommend f/u with a certified exercise professional

☐ Physical activity (FH-7.3.1-FH-7.3.11)
  ☐ Consistency (FH-7.3.2)
  ☐ Frequency (FH-7.3.3)
  ☐ Duration (FH-7.3.4)
  ☐ Intensity (FH-7.3.5)
  ☐ Type of physical activity (FH-7.3.6)
  ☐ Strength (FH-7.3.8)
  ☐ TV/screen time (FH-7.3.8)
  ☐ Other sedentary activity time (FH-7.3.9)
☑ Energy Intake (1.1.1)
☐ Weight (AD-1.1.2.1-1.1.2.2)
☐ Body mass index (BMI) (AD-1.1.5.1)
CASE STUDY 4: Patient/client with BMI of >40 kg/m²

Initial Progress Note

Conducted by a RDN, who after reviewing the Scope of Practice for the Registered Dietitian Nutritionist, including the Scope of Practice Decision Algorithm, to assess knowledge and competencies, determined that the RDN did not possess fitness or exercise certification and did not have enough knowledge and training to provide education beyond the 2018 PA Guidelines.

Name: __M.S.__  Age: __45__  Referring physician: __T. Smith__

Disclaimer: Read disclaimers for this case found at the beginning of the case studies.

Nutrition Assessment

Client History

Age: __45__  Gender: __Male__

Patient/Client/Family/Health History

<table>
<thead>
<tr>
<th>Patient/client chief nutrition complaint:</th>
<th>obesity with weight re-gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical history:</td>
<td>ulcerative colitis, s/p ileostomy &amp; pouch; hypercholesterolemia; s/p sleeve gastrectomy surgery 10 years ago; pernicious anemia</td>
</tr>
<tr>
<td>Musculoskeletal:</td>
<td>DJD, cervical spondylosis; s/p MVA: fractured tibia with rod stability, fractured navicular</td>
</tr>
<tr>
<td>Psychological:</td>
<td>bi-polar disorder</td>
</tr>
</tbody>
</table>

Social History

<table>
<thead>
<tr>
<th>Socioeconomic factors:</th>
<th>Financially Well Situated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living housing situation:</td>
<td>Lives with partner</td>
</tr>
</tbody>
</table>
Food/Nutrition-Related History

Based on 24-hour recall:

<table>
<thead>
<tr>
<th>Total energy estimated intake in 24 hours:</th>
<th>Estimated fat intake:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500 – 1800 kcal/day</td>
<td>20% of energy (kcal) from FAT</td>
</tr>
<tr>
<td></td>
<td>Estimated carbohydrate intake:</td>
</tr>
<tr>
<td></td>
<td>55% of energy (kcal) from dietary Carbohydrate (CHO)</td>
</tr>
<tr>
<td></td>
<td>Estimated protein intake:</td>
</tr>
<tr>
<td></td>
<td>25% of energy (kcal) from dietary protein (PRO)</td>
</tr>
</tbody>
</table>

Physical Activity

Physical Activity:

☐ Not currently physically active.
☑ Physical activity is as follows:

<table>
<thead>
<tr>
<th>Type of Physical Activity</th>
<th>Physical Therapy Routine – including resistance exercises</th>
<th>Stationary Bike</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (times/week)</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Duration (minutes/day)</td>
<td>30-45</td>
<td>15-20</td>
</tr>
<tr>
<td>Total Minutes Per Week</td>
<td>60-90</td>
<td>60-80</td>
</tr>
<tr>
<td>Intensity (low, moderate, or high)</td>
<td>Low/moderate</td>
<td>Low</td>
</tr>
</tbody>
</table>

Meeting current Physical Activity Guidelines:  
☐ Yes  ☑ No

(At least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity per week or combination of moderate- and vigorous-intensity and 2 days per week muscle-strengthening activities)

TV/screen time: 10 hours per day

Prior to MVA, patient/client was very active, sitting only ~ 3-4 hours daily.
Physical Activity Clearance for independent exercise:
☐ Yes
☐ No
☑ Pending clearance from orthopedic physician for resistance training – when discharged from physical therapy in one week.

Readiness to change nutrition-related behaviors:
☐ Pre-contemplation (not thinking about being physically active)
☐ Contemplation (thinking about being active; not doing any physical activity)
☐ Preparation (intending to change soon or doing some physical activity)
☑ Action (meeting the Physical Activity Guidelines but for less than 6 months)
☐ Maintenance (meeting the Physical Activity Guidelines for more than 6 months)

Biochemical, Medical Tests, and Procedures
Fasting Blood Sample

<table>
<thead>
<tr>
<th>Lipid Profile/Pertinent Labs</th>
<th>Reference</th>
<th>Initial</th>
<th>8 months</th>
<th>12 months</th>
<th>14 months</th>
<th>26 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cholesterol (mg/dL)</td>
<td>&lt;200</td>
<td>251</td>
<td>128</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LDL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ calculated</td>
<td>&lt;100</td>
<td>138</td>
<td>53</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ direct (mg/dL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDL (mg/dL)</td>
<td>&gt;40</td>
<td>44</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG (mg/dL)</td>
<td>&lt;150</td>
<td>223</td>
<td>139</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glucose (mg/dL)</td>
<td>&lt;100</td>
<td>122</td>
<td>105</td>
<td>98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>&lt;5.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg)</td>
<td>&lt;120</td>
<td>145</td>
<td>140</td>
<td>115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diastolic blood pressure (mmHg)</td>
<td>&lt;80</td>
<td>82</td>
<td>76</td>
<td>76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other: Vit B12 pg/ML</td>
<td>180-900</td>
<td>145</td>
<td>232</td>
<td>315</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Anthropometric Measurements

Stated height: __74in__  
Body Mass Index (BMI): ___30.2 (kg/m2)___  
Stated weight: __225lb__  
Waist circumference: ___36 in___

Weight change

<table>
<thead>
<tr>
<th>Date</th>
<th>Initial</th>
<th>6 week</th>
<th>12 months</th>
<th>15 months</th>
<th>17 months</th>
<th>21 months</th>
<th>28 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (lb.)</td>
<td>324.9</td>
<td>304.9</td>
<td>225.3</td>
<td>181</td>
<td>188</td>
<td>191</td>
<td>225</td>
</tr>
<tr>
<td>BMI (kg/m2)</td>
<td>44.2</td>
<td>41.4</td>
<td>30.2</td>
<td>23.9</td>
<td>24.1</td>
<td>25.9</td>
<td>30.2</td>
</tr>
</tbody>
</table>

Comparative Standards

Method for estimating total energy needs: Measured Resting Metabolic Rate (RMR): 1700 kcal/day
Total estimated energy needs in 24 hours: 2200 kcal/day (RMR x Physical Activity Level)

Nutrition Diagnosis

The following are possible nutrition and PA-related Nutrition Diagnoses. The assessment is not limited to using these diagnoses. Prioritize diagnoses.

☐ Food- and nutrition-related knowledge deficit (NB-1.1)
☐ Not ready for diet/lifestyle change (NB-1.3)
☐ Self-monitoring deficit (NB-1.4)
☐ Disordered eating pattern (NB-1.5)
☑ Physical inactivity (NB-2.1)
☐ Excessive physical activity (NB-2.2)
☐ Inability to manage self-care (NB-2.3)
☐ Poor nutrition quality of life (NB-2.5)
☐ Underweight (NC-3.1)
☑ Overweight/obesity (NC-3.3)

Nutrition Diagnosis Statements

Nutrition diagnosis (problem), related to etiology as evidenced by Signs/Symptoms:

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Related To</th>
<th>As Evidenced By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity</td>
<td>insufficient physical activity</td>
<td>Current BMI and increasing weight gain over the past year.</td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>Lumbar/cervical pain</td>
<td>Medical history and patient/client statements.</td>
</tr>
</tbody>
</table>
Nutrition Intervention

Categories of Nutrition Interventions:
Food and/or Nutrient Delivery (not applicable for physical activity-related interventions)

Nutrition Education
- ☐ Nutrition Education- Content (E-1.1-1.3)
- ☐ Nutrition Education- Application (E-2.1-2.3)

Nutrition Counseling
- ☐ Theoretical Basis/Approach (C-1.1-1.5)
- ☑ Strategies (C-2.1-2.11)

Coordination of Nutrition Care by a Nutrition Professional
- ☑ Collaboration and Referral of Nutrition Care (RC-1.1-1.6)
- ☐ Discharge and Transfer of Nutrition Care to a New Setting or Provider (RC-2.1-2.3)

Intervention #1: Nutrition counseling strategies: utilized Motivational Interviewing, Positive Psychology theories and Appreciative Inquiry in discussing differences in current food and activity choices and choices when patient/client was able to be more active.

Goals/Expected Outcome: Patient/client will achieve desired kcal level; specific dietary increases in fiber, fruits/vegetables, healthy fats; micronutrient intake monitored. Increase stationary bike time to 20 – 30 minutes.

Intervention #2: Coordination of Care: Discussed community resources and certified of appropriate fitness professional for patient/client limitations when discharged from physical therapy

Goals/Expected Outcome: Patient/client will choose a clinical exercise specialist for development of physical activity and resistance training plan when cleared for additional exercise types.

Intervention #3: Coordination of Care: Provide patient/client with community physical activity resources.

Goals/Expected Outcome: Patient/client will identify one appropriate daily activity using community resources that are not currently in plan, such as swimming or disc golf.
Educational Materials:
☑ Sit Less. Move More.
☐ Being Active as We Get Older
☐ Decisional Balance worksheet
☐ Being Active for a Better Life
☐ EIM RX for Health: _______________________
☑ Guide to Using Step Counters or Fitness Tracker
☑ Community Resources handout
☐ Other: __________________________________________________________

Monitoring and Evaluation

Recommend f/u with RDN in _____2______ ☑ week(s) ☐ month(s) ☐ PRN: ____________________
Recommend f/u with a certified exercise professional
☑ Physical activity (FH-7.3.1-FH-7.3.11)
  ☐ Consistency (FH-7.3.2)
  ☑ Frequency (FH-7.3.3)
  ☐ Duration (FH-7.3.4)
  ☐ Intensity (FH-7.3.5)
  ☐ Type of physical activity (FH-7.3.6)
  ☐ Strength (FH-7.3.8)
  ☐ TV/screen time (FH-7.3.8)
  ☐ Other sedentary activity time (FH-7.3.9)
☑ Energy Intake (1.1.1)
☐ Weight (AD-1.1.2.1-1.1.2.2)
☐ Body mass index (BMI) (AD-1.1.5.1)
CASE STUDY 5

Initial Progress Note

Conducted by a RDN, who after reviewing the Scope of Practice for the Registered Dietitian Nutritionist, including the Scope of Practice Decision Algorithm, to assess knowledge and competencies, determined that the RDN did not possess fitness or exercise certification and did not have enough knowledge and training to provide education beyond the 2018 PA Guidelines.

Name: J.R. Age: 48 Referring physician: T. Smith

Disclaimer: Read disclaimers for this case found at the beginning of the case studies.

Nutrition Assessment

Client History

Age: 48 Gender: Male

Patient/Client/Family/Health History

<table>
<thead>
<tr>
<th>Patient/client chief nutrition complaint:</th>
<th>obesitity type 2 diabetes, hypertriglyceridemia, hypertension, metabolic syndrome, weight gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musculoskeletal:</td>
<td>peripheral neuropathy</td>
</tr>
<tr>
<td>Psychological:</td>
<td>depression</td>
</tr>
<tr>
<td>Physical findings:</td>
<td>acanthosis nigricans</td>
</tr>
</tbody>
</table>

Social History

<table>
<thead>
<tr>
<th>Socioeconomic factors:</th>
<th>Financially Stable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living housing situation:</td>
<td>Lives with wife and 2 children</td>
</tr>
</tbody>
</table>
Food/Nutrition-Related History

Based on 24-hour recall:

| Total energy estimated intake in 24 hours: | Estimated fat intake: |
| 2800 kcal/day | 30% of energy (kcal) from FAT |

| Estimated carbohydrate intake: |
| 45% of energy (kcal) from dietary Carbohydrate (CHO) |

| Estimated protein intake: |
| 25% of energy (kcal) from dietary protein (PRO) |

Physical Activity

Physical Activity:

☐ Not currently physically active.

☑ Physical activity is as follows:

<table>
<thead>
<tr>
<th>Type of Physical Activity</th>
<th>Hiking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (times/week)</td>
<td>1</td>
</tr>
<tr>
<td>Duration (minutes/day)</td>
<td>60</td>
</tr>
<tr>
<td>Total Minutes Per Week</td>
<td>60</td>
</tr>
<tr>
<td>Intensity (low, moderate, or high)</td>
<td>Moderate/high</td>
</tr>
</tbody>
</table>

Meeting current Physical Activity Guidelines: ☐ Yes ☑ No

(At least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity per week or combination of moderate- and vigorous-intensity and 2 days per week muscle-strengthening activities)

TV/screen time: 7.5 hours per day
Physical Activity Clearance for independent exercise:
☑ Yes
☐ No
☐ Pending clearance from orthopedic physician for resistance training – when discharged from physical therapy in one week.

Readiness to change nutrition-related behaviors:
☐ Pre-contemplation (not thinking about being physically active)
☐ Contemplation (thinking about being active; not doing any physical activity)
☑ Preparation (intending to change soon or doing some physical activity)
☐ Action (meeting the Physical Activity Guidelines but for less than 6 months)
☐ Maintenance (meeting the Physical Activity Guidelines for more than 6 months)

Biochemical, Medical Tests, and Procedures
Fasting Blood Sample

<table>
<thead>
<tr>
<th>Lipid Profile/Pertinent Labs</th>
<th>Reference</th>
<th>Initial</th>
<th>3 months</th>
<th>6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cholesterol (mg/dL)</td>
<td>&lt;200</td>
<td>316</td>
<td>198</td>
<td>175</td>
</tr>
<tr>
<td>LDL</td>
<td>&lt;100</td>
<td>—</td>
<td>N/A</td>
<td>148</td>
</tr>
<tr>
<td>HDL</td>
<td>&gt;40</td>
<td>5</td>
<td>21</td>
<td>25</td>
</tr>
<tr>
<td>TG (mg/dL)</td>
<td>&lt;150</td>
<td>894</td>
<td>322</td>
<td>250</td>
</tr>
<tr>
<td>Glucose (mg/dL)</td>
<td>&lt;100</td>
<td>—</td>
<td>191</td>
<td>109</td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>&lt;5.6</td>
<td>—</td>
<td>7.1</td>
<td>6.0</td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg)</td>
<td>&lt;120</td>
<td>120</td>
<td>118</td>
<td></td>
</tr>
<tr>
<td>Diastolic blood pressure (mmHg)</td>
<td>&lt;80</td>
<td>82</td>
<td>77</td>
<td></td>
</tr>
</tbody>
</table>

Anthropometric Measurements
Stated height: ___70.5in___
Stated weight: ___254lb___
Body Mass Index (BMI): ___36.1 (kg/m2)___
Waist circumference: ___42 in___
Weight change
20 pound weight gain

Comparative Standards

Method for estimating total energy needs: Measured Resting Metabolic Rate (RMR): 2075 kcal/day
Total estimated energy needs in 24 hours: 2698 kcal/day (RMR x Physical Activity Level)

Nutrition Diagnosis

The following are possible nutrition and PA-related Nutrition Diagnoses. The assessment is not limited to using these diagnoses. Prioritize diagnoses.

☐ Food- and nutrition-related knowledge deficit (NB-1.1)
☐ Not ready for diet/lifestyle change (NB-1.3)
☐ Self-monitoring deficit (NB-1.4)
☐ Disordered eating pattern (NB-1.5)
☑ Physical inactivity (NB-2.1)
☐ Excessive physical activity (NB-2.2)
☐ Inability to manage self-care (NB-2.3)
☐ Poor nutrition quality of life (NB-2.5)
☐ Underweight (NC-3.1)
☑ Overweight/obesity (NC-3.3)

Nutrition Diagnosis Statements
Nutrition diagnosis (problem), related to etiology as evidenced by Signs/Symptoms:

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Related To</th>
<th>As Evidenced By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity</td>
<td>Excess energy intake and physical inactivity</td>
<td>24 hour recall and client comments.</td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>Stage of readiness</td>
<td>Patient statements</td>
</tr>
</tbody>
</table>
Nutrition Intervention

Categories of Nutrition Interventions:
Food and/or Nutrient Delivery (not applicable for physical activity-related interventions)

Nutrition Education
- ☐ Nutrition Education- Content (E-1.1-1.3)
- ☑ Nutrition Education- Application (E-2.1-2.3)

Nutrition Counseling
- ☐ Theoretical Basis/Approach (C-1.1-1.5)
- ☑ Strategies (C-2.1-2.11)

Coordination of Nutrition Care by a Nutrition Professional
- ☑ Collaboration and Referral of Nutrition Care (RC-1.1-1.6)
- ☐ Discharge and Transfer of Nutrition Care to a New Setting or Provider (RC-2.1-2.3)

Intervention #1: Nutrition Counseling Strategies: Use of Motivational Interviewing, Appreciative Inquiry, and Cognitive Behavior Therapy to discuss recent normal blood glucose readings and circumstances and choices leading to normal readings and strategies to implement now to maintain normal BG.

Goals/Expected Outcome: Patient/client to continue increased intake of fiber rich foods and modest protein; increased movement throughout the day, and maintain or continue weight loss, and also, hydration monitoring secondary to increased blood glucose.

Intervention #2: Coordination of care: referral to NCAA certified exercise professional for fitness or stress test and personalize physical activity routine.

Goals/Expected Outcome: Patient/client with a personalized fitness routine with specific education considering peripheral neuropathy. Improved fitness, decreased waist circumference, reduced HgA1C, decreased triglycerides, increased HDL.

Intervention #3: Nutrition Education-Application- discussed PA Guidelines and benefit of moving more throughout the day in addition to purposeful PA.

Goals/Expected Outcome: Patient/client verbally expressed understanding and committed to use of a fitness tracker to increase daily steps and purposeful activity such as 20 minute walks.
Educational Materials:

☑ Sit Less. Move More.
☐ Being Active as We Get Older
☐ Decisional Balance worksheet
☑ Being Active for a Better Life
☑ EIM RX for Health: Type 2 Diabetes
☐ Guide to Using Step Counters or Fitness Tracker
☑ Community Resources handout
☐ Other: ________________________________

Monitoring and Evaluation

Recommend f/u with RDN in _____2______ ☑ week(s) ☐ month(s) ☐ PRN: _________________
Recommend f/u with a certified exercise professional

☑ Physical activity (FH-7.3.1-FH-7.3.11)
  ☐ Consistency (FH-7.3.2)
  ☑ Frequency (FH-7.3.3)
  ☐ Duration (FH-7.3.4)
  ☐ Intensity (FH-7.3.5)
  ☐ Type of physical activity (FH-7.3.6)
  ☐ Strength (FH-7.3.8)
  ☐ TV/screen time (FH-7.3.8)
  ☑ Other sedentary activity time (FH-7.3.9)

☐ Energy Intake (1.1.1)
☐ Weight (AD-1.1.2.1-1.1.2.2)
☑ Body mass index (BMI) (AD-1.1.5.1)

((NCCA); Agriculture; Charuhas MP, 2017; Clifford D, 2015; Committee., 2018a, 2018b, 2018c, 2018d; Dietetics; Dietetics; Dietetics; Dietetics; Dietetics; Dietetics; Dietetics; Dietetics; Dietetics; Dietetics; Donnelly et al., 2009; Elwyn et al., 2012; Hoelscher DM, 2013; Jortberg et al., 2015; Kruskall, 2017; Lacey K, 2003; Magal M, 2016; A. C. o. S. Medicine; A. C. o. S. Medicine; Medicine, 2017a, 2017b; E. i. Medicine; E. i. Medicine; Ogata, 2013; Powers et al., 2016; Procter SB, 2014; Raynor HA, 2016; Robinson GE, 2018; Rollnick S, 2008; Sallis et al., 2016; Seagle HM, 2009; Steinmuller P, 2014; Swan, 2017; Systems; T, 2018; Thomas, 2016; U.S. Department of Health and Human Services, 2018a, 2018b; Velicer; Visocan B, 2006)
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References- Manually Written


Appendix 1
Definitions and Acronyms

ACSM – American College of Sports Medicine
   ACSM-GEI – ACSM Certified Group Exercise Instructor
   ACSM-CEP – ACSM Certified Clinical Exercise Physiologist
   ACSM-EP – ACSM Certified Exercise Physiologist
   ACSM-CPT – ACSM Certified Personal Trainer

The Academy – Academy of Nutrition and Dietetics
ACE – American Council on Exercise
ADIME – Assessment, Diagnosis, Intervention, Monitoring/Evaluation
AMA – American Medical Association
BG – Blood Glucose
BMI – Body Mass Index
CBT – Cognitive-Behavioral Theory
CDR – Commission on Dietetic Registration
Chol – Cholesterol
COE – Code of Ethics
CSSD – Certified Specialist in Sports Dietetics
DOB – Date of birth
DPG – Dietetic Practice Group
EIM – Exercise is Medicine
eNCPT – electronic Nutrition Care Process Terminology
FFM – Fat Free Mass
HDL-C – High Density Lipoprotein-Cholesterol
HbA1c – Hemoglobin A1c or glycated hemoglobin test
IDNT – International Dietetics and Nutrition Terminology
JCC – Jewish Community Center
Baseline activity – refers to the light-intensity activities of daily life, such as standing, walking slowly, and lifting lightweight objects. People vary in how much baseline activity they do. People who do only baseline activity are considered to be inactive. They may do very short episodes of moderate- or vigorous-intensity activity, such as climbing a few flights of stairs, but these episodes aren’t long enough to count toward meeting the Guidelines.

Exercise – physical activity that is planned, structured, repetitive, and designed to improve or maintain physical fitness, physical performance, or health. Exercise encompasses all intensities.
**Exercise prescription** – a detailed exercise plan that is tailored to a person’s current fitness and health goals. Based on the patients/clients current fitness level as assessed by objective fitness tests. These tests include, but are not limited to, cardiorespiratory fitness, musculoskeletal strength and endurance, flexibility, balance (for older adults), and body composition. Provided by certified fitness professional.

**Health** – a human condition with physical, social, and psychological dimensions, each characterized on a continuum with positive and negative poles. Positive health is associated with a capacity to enjoy life and to withstand challenges; it is not merely the absence of disease. Negative health is associated with morbidity, and in the extreme, with premature mortality.

**Health-enhancing physical activity** – activity that, when added to baseline activity, produces health benefits. In this document, the term “physical activity” generally refers to health-enhancing physical activity. Brisk walking, jumping rope, dancing, lifting weights, climbing on playground equipment at recess, and doing yoga are all examples of physical activity. Some people (such as postal carriers or carpenters on construction sites) may get enough physical activity on the job to meet the Guidelines (2).

**High-intensity interval training (HIIT)** – a form of interval training consisting of alternating short periods of intense anaerobic exercise with less intense aerobic recovery periods. There are no universally accepted lengths for either the anaerobic period, the recovery period, or the ratio of the two; no universally accepted number of cycles for any HIIT session or the entire duration of the training bout; and no universally accepted relative intensity at which the intense anaerobic component should be performed.

**Non-exercise physical activity** – all physical activity that is not exercise.

**Physical activity** – bodily movement produced by skeletal muscles that results in energy expenditure beyond resting. The term does not require or imply any specific aspect or quality of movement and encompasses all types, intensities, and domains.

**Physical activity guidance** – a patient/client-centered process used by RDs and other health professionals to assist medically-cleared patients/clients with planning and executing ways to increase their physical activity level in accordance with current public health guidelines. Uses a patient’s/client’s current level of physical activity and readiness to change as the basis on which personalized physical activity goals and plans can be made. Requires the health professional to use cognitive and behavioral counseling skills to facilitate discussion with a patient/client in defining and attaining his/her physical activity goals.

**Physical fitness** – the ability to carry out daily tasks with vigor and alertness, without undue fatigue and with ample energy to enjoy leisure-time pursuits and meet unforeseen emergencies. The World Health Organization defines it as "the ability to perform muscular work satisfactorily." Physical fitness includes a number of components consisting of cardiorespiratory endurance (aerobic power), skeletal muscle endurance, skeletal muscle strength, skeletal muscle power, flexibility, balance, speed of movement, reaction time, and body composition.

**Qualified Health and Fitness Professionals** – fitness professionals who have been certified by an organization whose certification programs have been accredited through National Commission for Certifying Agencies (NCCA).
Quality of life – a concept that reflects how individuals perceive and react to their health status and to other, non-medical aspects of their lives.

- Health-related quality of life – a multi-dimensional concept that reflects the way that individuals perceive and react to their health status. It includes domains related to physical, mental, emotional, and social functioning.

Sedentary behavior – any waking behavior characterized by an energy expenditure of 1.5 or fewer METs (energy expenditure of an active individual compared with the resting energy expenditure. One MET is defined as 1 kilocalorie per kilogram per hour and is the energy consumption of a person while at complete rest. Most office work, driving a car, and sitting while watching television are examples of sedentary behaviors.

Transtheoretical Model of Change (Stages of Change Model) in relation to physical activity.

- Precontemplation – Patient/client has no intention to be physically active
- Contemplation – Patient/client knows they should exercise and is thinking about being more active.
- Preparation – Patient/client is planning to become physically active within the next 6 months.
- Action – Patient/client is meeting the physical activity guidelines for less than 6 months.
- Maintenance – Patient/client is meeting the physical activity guidelines for the last 6 months or more.
# Appendix 2

Certifications accredited by the National Commission for Certifying Agencies (NCCA)

<table>
<thead>
<tr>
<th>Name of Organization</th>
<th>Name of Certification</th>
<th>Qualifications</th>
<th>Purpose</th>
</tr>
</thead>
</table>
| American College of Sports Medicine (ACSM) | Certified Personal Trainer (ACSM-CPT®) | • 18 years of age  
• High School Diploma or Equivalent (HSD)  
• Adult Cardiopulmonary resuscitation (CPR)/Automated External Defibrillator (AED) Certification (CPR/AED) with hands-on skills component  
• Pass the ACSM-CPT® certification exam. | Plan and implement exercise programs for healthy individuals and those who have medical clearance to exercise in a one-on-one setting. |
| American College of Sports Medicine | Certified Group Exercise Instructor (ACSM-CEI®) | • 18 years of age  
• HSD  
• Adult CPR/AED Certification with hands-on skills component  
• Pass the ACSM-CEI® certification exam. | Plan and implement exercise programs for healthy individuals and those who have medical clearance in exercise. Small and large group exercise settings. |
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<th>Name of Certification</th>
<th>Qualifications</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>American College of Sports Medicine</td>
<td>Certified Exercise Physiologist (ACSM-EP®)</td>
<td>• BS degree in exercise science, exercise physiology, or kinesiology&lt;br&gt;• Adult CPR/AED Certification with hands on practical skills component.&lt;br&gt;• Pass the ACSM-EP® certification exam.</td>
<td>Select appropriate fitness assessments, develop individualized exercise prescriptions, and optimize adoption and adherence of exercise and other healthy behaviors for those health populations and those with medically controlled diseases</td>
</tr>
<tr>
<td>American College of Sports Medicine</td>
<td>Certified Clinical Exercise Physiologist (ACSM-CEP®)</td>
<td>• BS degree in exercise physiology and 1,200 hours of clinical exercise experience or MS degree in clinical exercise physiology and 600 hours of clinical exercise experience&lt;br&gt;• Basic Life Support or the Professional Rescuer Certification with hands on practical skills component.&lt;br&gt;• Pass the ACSM-CEP® certification exam.</td>
<td>Select appropriate fitness assessments, develop individualized exercise prescriptions for those with chronic diseases or conditions, including, but not limited to, individuals with cardiovascular, pulmonary, metabolic, orthopedic, musculoskeletal, neuromuscular, neoplastic, immunologic and hematologic diseases, and promote adoption and adherence to healthy behaviors through a patient centered approach.</td>
</tr>
<tr>
<td>National Strength and Conditioning Association (NSCA)</td>
<td>Certified Personal Trainer (NSCA-CPT)</td>
<td>• 18 years of age&lt;br&gt;• HSD&lt;br&gt;• CPR/AED Certification (hands on)</td>
<td>Work with healthy clients in one-on-one situations</td>
</tr>
<tr>
<td>Name of Organization</td>
<td>Name of Certification</td>
<td>Qualifications</td>
<td>Purpose</td>
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</tbody>
</table>
| National Strength and Conditioning Association | Certified Special Population Specialist | • Current NSCA Certification or RDN Credential  
• CPR/AED Supervised Practice Experience | Use an individualized approach to assess, motivate, educate, & train special population clients |
| National Strength and Conditioning Association | Certified Strength and Conditioning Specialist | • BS (any discipline) from an accredited institution  
• CPR/AED | Implement strength & conditioning programs for athletes in a team setting |
| American Council on Exercise (ACE) | Personal Trainer Certification | • 18 Years of Age  
• HSD  
• CPR/AED | One-on-one or small group training for healthy individuals |
| American Council on Exercise | Group Fitness Instructor Certification | • 18 Years of Age  
• HSD  
• CPR/AED | Lead fitness classes for healthy individuals |
| American Council on Exercise | Health Coach Certification | • 18 Years of Age  
• CPR/AED  
• Current NCCA accredited certification or license in nutrition (RDNs may qualify) or AS degree or higher in nutrition  
• 2 years’ work experience | Lead healthy clients to sustainable, healthy change by applying knowledge in behavior change, physical activity, & nutrition |
| American Council on Exercise | Specialty Certifications  
Mind Body  
Fitness Nutrition  
Weight Management | • NCCA accredited certification or equivalent professional credentials, including DTR and RDN | See website for specifics |

*Healthy generally refers to individuals free of disease. See individual certification for definition of populations served.*
## Appendix 3
### Minimum Requirements for American College of Sports Medicine (ACSM) Certification

from: https://www.acsm.org/get-stay-certified/get-certified

<table>
<thead>
<tr>
<th>ACSM Certifications</th>
<th>Minimum Requirements</th>
</tr>
</thead>
</table>
| Certified Group Exercise Instructor (ACSM-GEI<sup>®</sup>) | • 18 years of age or older  
• High school diploma or equivalent  
• Adult CPR/AED certification (with hands-on practical skills component) |
| Certified Personal Trainer (ACSM-CPT<sup>®</sup>)       | • 18 years of age or older  
• High school diploma or equivalent  
• Adult CPR/AED certification (with hands-on practical skills component) |
| Certified Exercise Physiologist (ACSM-EP<sup>®</sup>)   | • Bachelor’s degree in Exercise Science, Exercise Physiology or Kinesiology from a regionally accredited college or university  
• Adult CPR/AED certification (with hands-on practical skills component) |
| Certified Clinical Exercise Physiologist (ACSM-CEP<sup>®</sup>) | • Master’s degree in Clinical Exercise Physiology or equivalent  
• 600 hours of documented hands-on clinical experience  
OR  
• Bachelor’s degree in Exercise Science, Exercise Physiology, or equivalent  
• 1,200 hours of documented hands-on clinical experience  
AND  
• Basic Life Support Provider (BLS) or CPR for the Professional Rescuer certification (with hands-on practical skills component) |

CPR = cardiopulmonary resuscitation; AED = automatic external defibrillator; BLS = basic life support; ACLS = advanced cardiac life support; CoAES = Committee on Accreditation for the Exercise Sciences
### Appendix 4: Nutrition Related Knowledge and Skills of American College of Sports Medicine (ACSM) Certified Exercise Professionals

<table>
<thead>
<tr>
<th>Health Fitness Certifications</th>
<th>Exercise Is Medicine – Appendix 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinical Exercise Certification</strong></td>
<td><strong>Nutrition Related Knowledge and Skills</strong></td>
</tr>
<tr>
<td>Certified Exercise Physiologist (ACSM-EP®)</td>
<td>Knowledge of the basic principles of weight management and nutrition.</td>
</tr>
<tr>
<td>Exercise Physiologist-Certified (ACSM-EP®)</td>
<td>Knowledge of medical terminology (e.g., total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), triglycerides (TG)).</td>
</tr>
<tr>
<td>Certified Personal Trainer (ACSM-CPT®)</td>
<td>Knowledge of medical terminology (e.g., total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), triglycerides (TG)).</td>
</tr>
<tr>
<td>Certified Group Exercise Instructor (ACSM-GEI®)</td>
<td>Knowledge of clinical exercise physiology.</td>
</tr>
</tbody>
</table>

**Knowledge of the basic principles of weight management and nutrition.**

- Knowledge of the value of carbohydrates, fats, and proteins as fuels for exercise and physical activity.
- Knowledge of the role of medical terminology (e.g., total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), triglycerides (TG)).

**Knowledge of the timing of daily activities (e.g., medications, dialysis, meals, glucose monitoring) and their effect on exercise in patients with chronic diseases (e.g., medications, dialysis, meals, glucose monitoring).**

- Knowledge of the basic principles of weight management and nutrition.
- Knowledge of clinical exercise physiology.

**Knowledge of the value of carbohydrates, fats, and proteins as fuels for exercise and physical activity.**

- Knowledge of medical terminology (e.g., total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), triglycerides (TG)).
- Knowledge of the role of medical terminology (e.g., total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), triglycerides (TG)).
<table>
<thead>
<tr>
<th>Certification</th>
<th>Knowledge of the following terms:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinical Exercise Physiologist (ACSM-EP®)</strong></td>
<td>body composition, body mass index (BMI), lean body mass, anorexia nervosa, bulimia nervosa, and body fat distribution.</td>
</tr>
<tr>
<td><strong>Certified Personal Trainer (ACSM-CPT®)</strong></td>
<td>Knowledge of the components of a health-history questionnaire (e.g., past and current medical history, family history of disease, orthopedic limitations, prescribed medications, activity patterns, nutritional habits, stress and anxiety levels, smoking, alcohol use).</td>
</tr>
<tr>
<td><strong>Certified Group Exercise Instructor (ACSM-GEI®)</strong></td>
<td>Knowledge of the effectiveness of diet, exercise and behavior modification as a method for modifying body composition.</td>
</tr>
<tr>
<td><strong>Exercise Is Medicine</strong></td>
<td>Knowledge of the latest dietary guidelines for Americans.</td>
</tr>
<tr>
<td><strong>Physical Therapy/Band Care</strong></td>
<td>Knowledge of weight management terminology (e.g., obesity, overweight, percent fat, BMI, lean body mass, anorexia nervosa, bulimia nervosa, binge eating, metabolic syndrome, fat-free mass (FFM), resting metabolic rate (RMR), and thermogenesis).</td>
</tr>
</tbody>
</table>

- Knowledge of physical activity guidelines for Americans.
- Knowledge of the benefits of regular physical activity, including improved cardiovascular health, weight management, and disease prevention.
- Knowledge of the principles of exercise prescription, including exercise mode, intensity, duration, and frequency.
- Knowledge of common health conditions and their impact on exercise prescription.
- Knowledge of the role of exercise in disease prevention and management.
- Knowledge of the importance of individualized exercise programs.
- Knowledge of the latest research on exercise and health outcomes.

<table>
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<tr>
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<tr>
<td>body composition, body mass index (BMI), lean body mass, anorexia nervosa, bulimia nervosa, and body fat distribution.</td>
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</table>

- Knowledge of recommended plasma cholesterol levels (e.g., National Cholesterol Education Program/ATP Guidelines).
- Knowledge of the timing of daily activities (e.g., medications, dialysis, meals, glucose monitoring) and their effect on exercise in patients with chronic diseases.
- Knowledge of risk factor reduction programs and alternative community resources (e.g., dietary counseling, weight management, smoking cessation, stress management, physical therapy/back care).
- Knowledge of the effectiveness of diet, exercise and behavior modification as a method for modifying body composition.
- Knowledge of energy balance and basic nutritional guidelines (e.g., MyPlate, DHHS Dietary Guidelines for Americans).

- Knowledge of weight management terminology (e.g., obesity, overweight, percent fat, BMI, lean body mass, anorexia nervosa, bulimia nervosa, binge eating, metabolic syndrome, fat-free mass (FFM), resting metabolic rate (RMR) and thermogenesis).

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</table>

- Knowledge of risk factor reduction programs and alternative community resources (e.g., dietary counseling, weight management, smoking cessation, stress management, physical therapy/back care).
<table>
<thead>
<tr>
<th>Health Fitness Certifications</th>
<th>Knowledge of the female athlete triad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Exercise Physiologist (ACSM-EP®)</td>
<td>Knowledge of the unique dietary needs of clinically obese women (≥5’9” height), adults who require daily weight loss diet (≥400 calories per day), and pregnant women (≥3.5 mg/kg/day)</td>
</tr>
<tr>
<td>Exercise Physiologist-Certified (ACSM-EP®)</td>
<td>Knowledge of the number of the energy (kcal) in one gram of carbohydrates, fat, protein, and alcohol</td>
</tr>
<tr>
<td>Certified Group Exercise Instructor (ACSM-GEI®)</td>
<td>Knowledge of the number of the energy (kcal) in one gram of carbohydrates, fat, protein, and alcohol</td>
</tr>
<tr>
<td>Certified Personal Trainer (ACSM-CPT®)</td>
<td>Knowledge of the myths and consequences associated with various weight loss methods (e.g., fad diets, dietary supplements, over-exercising, starvation diets)</td>
</tr>
<tr>
<td>Clinical Exercise Certification</td>
<td>Knowledge of fuel sources for aerobic and anaerobic metabolism including carbohydrates, fats, and proteins</td>
</tr>
<tr>
<td>Clinical Exercise Certification</td>
<td>Knowledge of how medications or missed dose(s) of medications impact exercise and its progression</td>
</tr>
<tr>
<td>Clinical Exercise Certification</td>
<td>Knowledge of the effects of stress on dietary composition, weight management, and exercise performance</td>
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<tr>
<td>Clinical Exercise Certification</td>
<td>Knowledge of psychological and social services including dietary counseling, stress management, and exercise prescription</td>
</tr>
<tr>
<td>Clinical Exercise Certification</td>
<td>Knowledge of dietary composition and exercise prescription for stress management, behavioral weight management, and exercise prescription for stress management</td>
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<td>Clinical Exercise Certification</td>
<td>Knowledge of identifying individuals requiring referral to a physician or allied health services (e.g., physical therapy, dietary counseling, stress management, weight management, psychological and social services)</td>
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<td>Exercise Physiology-Certified (ACSM-CEP®)</td>
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<tr>
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<td>Certified Group Exercise Instructor (ACSM-GEI®)</td>
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</tbody>
</table>

Knowledge of the importance of examining/examining exercise prescription before exercising affected individuals.

Knowledge of the function of the cardiorespiratory, neuromuscular, metabolic, endocrine, and immune systems during and after exercise.

Knowledge of the consequences of inappropriate weight loss methods (e.g., saunas, dietary supplements, vibrating belts, body wraps, over-exercising, very low-calorie diets, electric stimulators, sweat suits, and alcohol intake).

Knowledge of the importance of maintaining normal hydration before, during, and after exercise.

Knowledge of the consequences of substance abuse.

Knowledge of the kilocalorie levels (kcal/kg) of carbohydrate, fat, protein, and alcohol.

Knowledge of the importance of risk factor reduction strategies (e.g., healthy nutrition, weight management, smoking cessation, stress management, back care, substance abuse).

Knowledge of the relationship between energy expenditures (kcal/kg) and weight loss.

Knowledge of disease-specific strategies and tools to improve exercise tolerance (e.g., breathing techniques, insulin pump use, prophylactic medications, etc.).

Knowledge of the importance of maintaining normal hydration before, during, and after exercise.

Knowledge of the acute and chronic responses to exercise training on the function of the cardiovascular, respiratory, musculoskeletal, neuromuscular, metabolic, endocrine, and immune systems in trained and untrained individuals.

Knowledge of the importance of maintaining normal hydration before, during, and after exercise.

Knowledge of the consequences of inappropriate weight loss methods (e.g., saunas, dietary supplements, vibrating belts, body wraps, over-exercising, very low-calorie diets, electric stimulators, sweat suits, and alcohol intake).

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</tr>
<tr>
<td></td>
<td>Knowledge of physiology and pathophysiology of diseases and conditions (e.g., cardiovascular disease, arthritis, type 2 diabetes, dyslipidemia, hypertension, metabolic syndrome, osteoporosis, peripheral artery disease, obesity, overweight, and obesity, and other related conditions).</td>
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<td>Knowledge of the effects of diet and exercise on blood glucose levels in diabetes.</td>
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<td>Knowledge of the recommended Frequency, Intensity, Time, Type, Volume, Progression (FITT-VP) principle for the development of cardiorespiratory fitness, muscular fitness and flexibility for clients with diseases and conditions (e.g., cardiac disease, arthritis, diabetes mellitus, dyslipidemia, hypertension, metabolic syndrome, cachexia, diabetes, respiratory disease, anemia, obesity, and chronic conditions).</td>
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<tr>
<td>Skill in modifying the exercise prescription and/or exercise choice for clients with diseases and conditions (e.g., cardiovascular disease, arthritis, diabetes mellitus, dyslipidemia, hypertension, metabolic syndrome, musculoskeletal injuries, overweight and obesity, osteoporosis, peripheral artery disease, pulmonary disease, obesity, and chronic conditions).</td>
<td></td>
</tr>
<tr>
<td>Skill in applying first-aid procedures for exercise-related injuries (e.g., bleeding, strains/sprains, fractures, shortness of breath, palpitations, hypoglycemia, allergic reactions, fainting/syncope).</td>
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</tr>
</tbody>
</table>

<table>
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<th>Exercise Is Medicine – Appendix 4</th>
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Appendix 5
Decisional Balance

Decisions
When people contemplate making changes, they consciously or unconsciously look at the pros and cons of the choice to make a change or stay the same. It is normal to have mixed feelings when making decisions; especially a decision that impacts your everyday routines such as increasing physical activity (PA), eating more healthy foods, and having a healthy eating pattern in your life. Although it may seem strange to think about the benefits of unhealthy eating or inactivity, but if there weren’t benefits, then you wouldn’t engage in the behavior!

Decisional Balance
Ultimately, people change their habits on their own. When asked what brought about the decision to change, they often say, “I got tired of the excuses” or “I decided it was time.” They consciously or unconsciously evaluated the pros and cons of becoming healthier. The importance of the pros for healthy eating and being active outweigh the cons. When you’re “on the fence” about making a change, it is helpful to write down the pros and cons of change; and the pros and cons of staying the same. To make a change, the cons or costs of the current behavior will outweigh the pros or benefits.

Changing Your Activity Habits
Have you been consistent with activity or exercise in the past? What did you gain? Perhaps when you were active consistently you had more energy, general feeling better, lower cholesterol, improved health, wore a smaller size, or took less medication. Ask yourself: What do I stand to gain and lose by continuing my current activity behaviors? What do I have to gain and lose being consistent with activity? Being active is a very broad topic, what specifically are you considering changing?

Make the Decision to Change Activity Habits
It helps to list the benefits and costs of changing or continuing your current behavior. On occasion, this process reveals that the costs of current behavior do not outweigh the benefits; i.e. change will not happen now. The benefit of discovery is freeing you to move on to a behavior that you can make the change. Below is an example.
<table>
<thead>
<tr>
<th>Benefits</th>
<th>Activity</th>
<th>Inactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased energy/vitality</td>
<td></td>
<td></td>
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<tr>
<td>Lower blood pressure and improved blood lipids</td>
<td></td>
<td></td>
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<tr>
<td>Better blood glucose (sugar) control</td>
<td></td>
<td></td>
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<tr>
<td>Lose fat; smaller size</td>
<td></td>
<td></td>
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<tr>
<td>Look and feel better</td>
<td></td>
<td></td>
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<tr>
<td>Less stress</td>
<td></td>
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<tr>
<td>No planning involved</td>
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<tr>
<td>Comfortable and familiar</td>
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<tr>
<td>More time for socialization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less commitment</td>
<td></td>
<td></td>
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<tr>
<td>More screen time</td>
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<tr>
<td>Need to join a gym or find an exercise partner</td>
<td></td>
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<tr>
<td>Takes time</td>
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<td></td>
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<tr>
<td>Doesn't always fit in social plans</td>
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<tr>
<td>Need to buy appropriate clothes and shoes</td>
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<tr>
<td>Decreased energy/vitality</td>
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<td></td>
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<tr>
<td>Stressed and irritable</td>
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<tr>
<td>Weight gain</td>
<td></td>
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<tr>
<td>Self-conscious</td>
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<tr>
<td>Not able to play with kids</td>
<td></td>
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<tr>
<td>Joint pain</td>
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</table>
Use the chart below to fill in the costs and benefits of changing and not changing. Begin by filling in your specific activity change. Compare them and ask yourself if the costs to being more active are worth it to you.

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<thead>
<tr>
<th>Benefits</th>
<th>Costs</th>
<th>Activity</th>
<th>Inactivity</th>
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</thead>
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It’s Your Choice

If you discovered that the costs of staying the same outweighs the benefit, what is the first step you will make to be active consistently?

If you discovered the pros of being active outweighed the cons, what change will you make?
Appendix 6
Guide to Using Step Counters

A key guideline for adults from the 2018 Physical Activity Guidelines for Americans is that some physical activity (PA) is better than none, and more is better than some. For substantial health benefits, adults should aim for 150 – 300 + minutes per week of PA. Monitoring PA through step counters is an easy way to set activity goals and monitor progress. Research has indicated that people who utilize step counters increase daily and weekly steps. The research supporting the 10,000 steps a day recommendation is limited. Therefore, the Physical Activity Guidelines Advisory Committee reviewed the literature on the relationship between health and daily steps to recommend 7,000 – 9,000 steps a day to achieve the recommended 150-300 minutes per week of moderate-to-vigorous PA. Keep in mind some people may need to achieve a higher daily step count to meet their goals.

When getting started, experts recommend wearing a step counter for several days to a week to determine baseline average steps. Once baseline is established, a general guideline is to increase 10% weekly or longer until you have reached the goal daily steps that meet your needs. For example, if your baseline average steps were indicative of the average American at 4,800, then you would aim for 5,280 daily steps the next week. If this is comfortable then your next goal is 5,808 daily steps, and on. Check your progress throughout the day to ensure you do not fall short of your goal!

How many steps do you take each day? Physical activity is key to a multitude of health benefits and every quality of life goal you have set for yourself!

Pedometer – A simple device to count steps. Benefits of Pedometers:

- **Simple to use.**
- **Low Tech.** Beneficial for individuals whose work environment restricts or prohibits devices that transmit data electronically.
- **Relatively inexpensive.** Expect to pay $20–$50 for a good-quality step counter. Inexpensive step counters tend to be inaccurate, fragile, wear out quickly, and not backed by a long-term warranty.
- **Wear it properly.** Most step counters operate best when placed on the waistband in line with the center of your kneecap. Make sure it is parallel to the ground. Reset the counter to zero and walk for 50 steps counting the number of steps in your head. Stop. Look at the number on your step counter. If it is within three steps of 50 (i.e., 47–53), then this is where you should place it each morning. If it is not within three steps, you will need to adjust it to find the right spot for you.
Smart Phone – A convenient way to count steps is using your phone and an app. Many phones have built in fitness and health apps that will track steps. Benefits of Smart Phone tracking:

- **Convenient.**
- **Visual impact** with charts or graphs and breakdown of intensity.
- **No additional fees** above the cost of phone and phone service.
- The newer the phone, the more accurate the accelerometer technology.

**Activity Tracker (e.g. FitBit, Apple Watch, Step Counter(pedometer))** – A fun and convenient way to count steps and, depending on the device, a way to receive cues to get up and move, and meet other programmable health goals. Benefits of activity trackers:

- **Convenient,** especially for technology savvy individuals.
- **Prompts,** many activity trackers provide programmable prompts to move and to meet other personalized health improvements.
- **App and website backup** to see more data over time with visual aids of graphs, charts and more.
- **Social** aspect of challenges and other support via app and website.

**For more information:**


