



The Role of Rehab Professionals in Educating patients on Lifestyle Management and Nutrition

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[Image link from McLaren Health Care](#)



Objectives

1. Describe the role of physical therapy professionals in educating the public on nutrition.
2. Review the legal scope of nutrition education – ensuring to avoid overlap with registered dietitians.
3. Break down barriers to disseminating information on lifestyle management when working directly with patients.
4. Describe strategies for maintenance of weight loss over the lifespan.
5. Synthesize the information provided and apply to relevant case studies.



Disclaimer/Disclosures

I also moonlight as a nutrition coach/consultant through Flexible Nutrition Strategies, LLC

The following presentation is for educational purposes only and reviews the scope of discussing basic nutritional parameters and educating patients on guidelines. Ensure that your information is generalized to the domain of public knowledge and not specialized medical nutrition therapy. It is your responsibility to ensure that the treatment strategies you provide align with the practice acts of any states within which you practice.





A Special Thank You

To Drs. Berner, Dean, and Tappenden



“ Building a community that advances the profession of physical therapy to improve the health of society. ”

[Mission statement of the APTA³](#)





“ Movement is a key to optimal living and quality of life for all people that extends beyond health to every person’s ability to participate in and contribute to society. The complex needs of society, such as those resulting from a sedentary lifestyle, beckon for the physical therapy profession to engage with consumers to reduce preventable health care costs and overcome barriers to participation in society to ensure the successful existence of society far into the future.”

[GUIDING PRINCIPLES TO ACHIEVE THE VISION HOD P06-19-46-54⁴](#)



Guiding Principals to Achieve the Vision⁴

Identity Quality Collaboration Value Innovation Consumer-centricity Access/Equity Advocacy

- As **independent practitioners**, doctors of physical therapy in clinical practice will embrace best practice standards
- The physical therapy profession will **demonstrate the value of collaboration** with other health care providers, consumers, community organizations, and other disciplines **to solve the health-related challenges that society faces** ... ensure that services are coordinated, of value, and consumer-centered by referring, co-managing ... directing and supervising care.
- Value has been defined as ***“the health outcomes achieved per dollar spent”***.⁵ To ensure the best value, services that the physical therapy profession will provide will be safe, effective, patient/client-centered, timely, efficient, and equitable.⁶ Outcomes will be both meaningful to patients/clients and cost-effective. Value will be demonstrated and achieved **in all settings**
 - “Value can be driven by [many things] ... better providers are usually more efficient. Good **quality is less costly** because of more accurate diagnoses, fewer treatment errors, lower complication rates, faster recovery, less invasive treatment, and the minimization of the need for treatment. More broadly, **better health is less expensive than illness.**”⁷
- Accountability is a core characteristic of the profession and will be **essential** to demonstrating value.



Last Updated: 09/20/2019
Contact: nationalgovernance@apta.org

THE ROLE OF THE PHYSICAL THERAPIST AND THE AMERICAN PHYSICAL THERAPY ASSOCIATION IN DIET AND NUTRITION HOD P06-19-08-44 [Previously Titled: The Role of the Physical Therapist in Diet and Nutrition] [initial HOD P06-15-22-17] [Position]

The American Physical Therapy Association (APTA) supports collaboration at the association and membership levels to promote education, research, and practice between physical therapists and registered dietitians to promote the health and well-being of society consistent with APTA's Vision and Guiding Principles to Achieve the Vision.

Diet and nutrition are key components of primary, secondary, and tertiary prevention of many conditions managed by physical therapists. It is within the professional scope of physical therapist practice to screen for and provide information on diet and nutritional issues to patients, clients, and the community. This includes appropriate consultation or co-management with or referral to a registered dietitian when seeking the expert opinion of another provider with specialized knowledge or skills, or to obtain services for a patient or client that are beyond the professional or personal scope of practice of the physical therapist.

[HOD P06-19-08-44](#)⁸, [HOD P06-19-27-12](#)⁹, and [APTA Nutrition and Physical Therapy landing page](#)¹⁰



“ The World Health Organization has mandated all providers address lifestyle principles, but most PT’s do not commonly implement the practice, despite most of our patients suffering from at least one chronic disease. ”

[Building a Lifestyle Medicine Physical Therapy Practice Course¹¹](#)



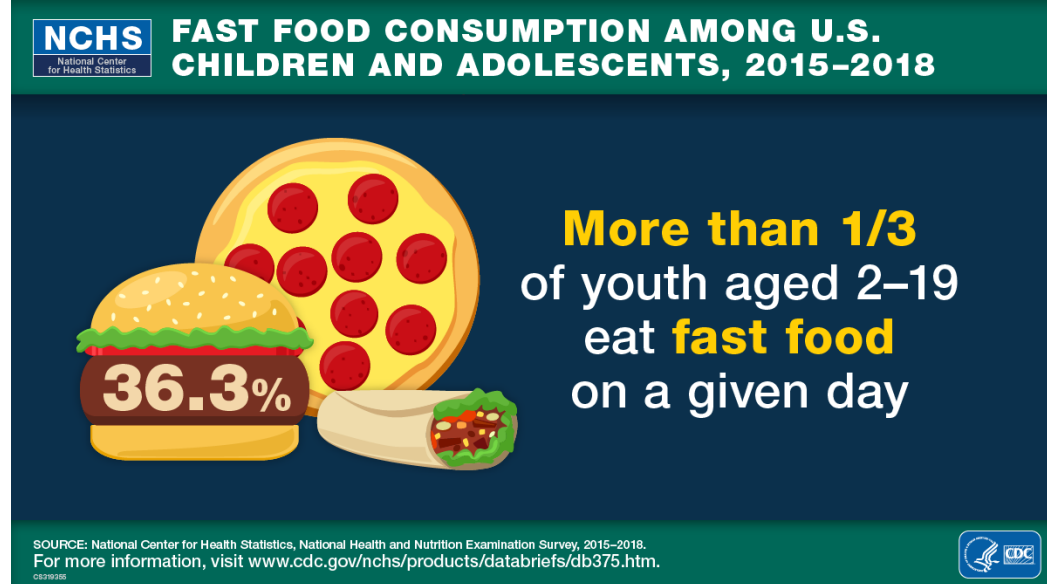
The Problem

SAD = Standard American Diet

- 90% don't reach the minimum vegetable intake¹³
- 75% don't eat a single piece of fruit daily¹³
 - Nearly half of fruit consumption comes from drinking juices¹⁴
- 99% don't reach the minimum for whole grains¹³

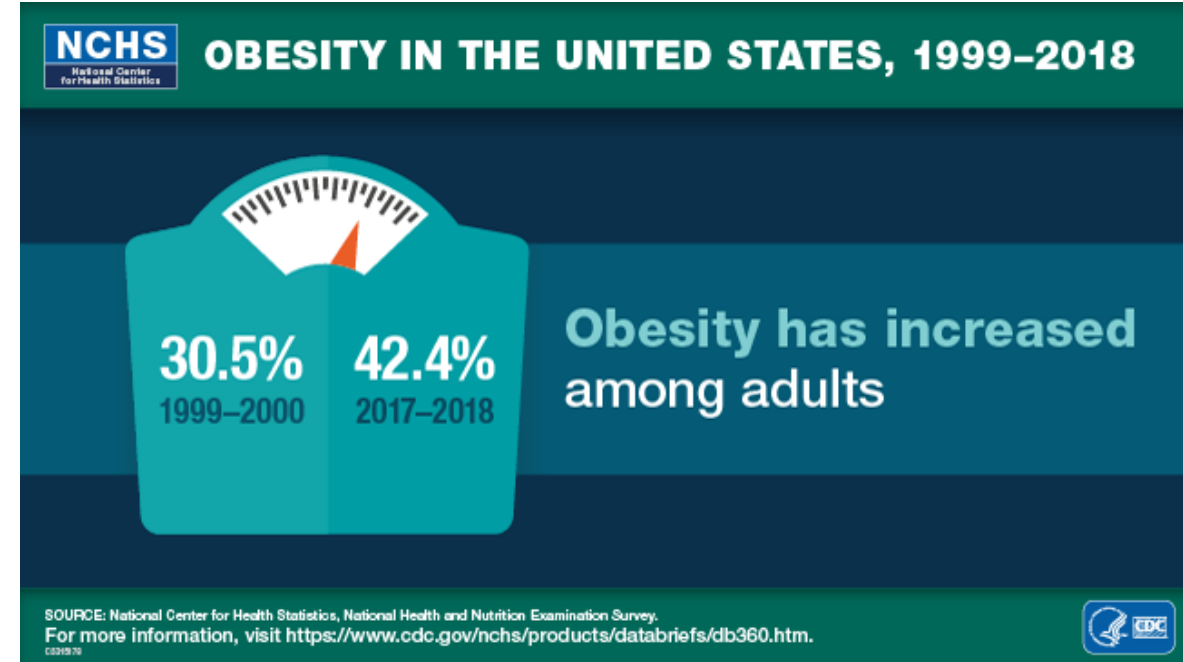
Sedentary Behaviors

- ~24% of Americans meet physical activity guidelines¹⁵



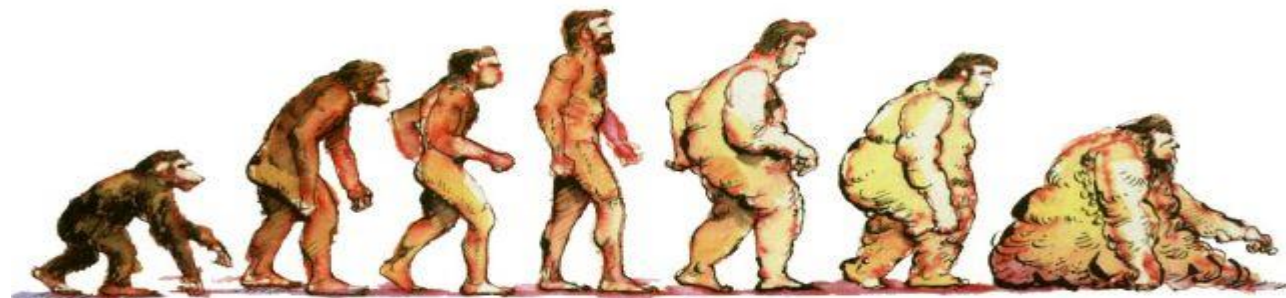
The Problem

- Population:
 - Total US – 331.5 million¹⁷
 - Physical therapists – nearly 313,000¹⁸
 - 95 physical therapists per 100,000 persons¹⁸
 - Registered dietitians and nutritionists – nearly 112,000¹⁹
 - Only 478 board certified in obesity and weight management¹⁹
- ❖ **>42% of the US population is obese (nearly 140 million)²⁰**
 - ❖ Obesity has reached epidemic proportions globally, with at least 2.8 million people dying each year as a result of being overweight or obese.²¹



Mortality due to Obesity²⁴

- Excess weight contributed to **more than 1,300 excess deaths per day** (nearly 500,000 per year), increasing the total mortality rate by nearly 18%²⁴
- Excess weight may be responsible for more deaths than annual mortality from COVID-19²⁴
- Excess-weight related deaths generally occur at earlier ages than COVID-19 deaths. Thus, they have an even larger impact on life expectancy.²⁴
- “While the COVID-19 pandemic has had substantial adverse effects, ... as the acute impacts of the pandemic are brought under control, the US still faces a chronic health crisis of increased morbidity and mortality year after year due to excess weight. This is likely only to worsen...”²⁴



[Image link](#)

“Any amount of physical activity has some health benefits”

[Top 10 things to know about PA guidelines for Americans²⁵](#)



[Executive Summary - 7 pages²⁷](#)



Lots of things count. And it all adds up.
Find what works for you.

Adults need a mix of physical activity to stay healthy.

Moderate-intensity aerobic activity
Anything that gets your heart beating faster counts.

Muscle-strengthening activity
Do activities that make your muscles work harder than usual.



Walk. Run. Dance. Play. What's **your** move?
health.gov/MoveYourWay



You can feel the benefits of physical activity today.

- ✓ Less stress
- ✓ Better mood
- ✓ Better sleep

Adults need a mix of physical activity to stay healthy.

Moderate-intensity aerobic activity
Anything that gets your heart beating faster counts.

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[Move Your Way^{®26}](#)

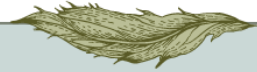


“ The practice of physical therapy is rapidly evolving and changing in purpose and scope ... Goals of the patient-physical therapy unit include ... maintaining health, preserving functional capacity ... developing or reestablishing function ... Adequate, effective, and efficient patient care is the ultimate goal of physical therapy. The physical therapist evaluates each patient, and determines those ways in which he can contribute to total health management. ”

[201 KAR 22:010 Objectives of physical therapy](#)^{28,29}



Our Scope



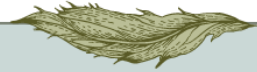
- What we **can** do

- Screen social determinants of health³⁰⁻³²
- Review current habits³²⁻⁴⁰
- Health Education³¹⁻⁴⁵
 - Provide references and/or established guidelines^{32, 34, 46-49}
- Discuss parameters of healthy eating^{34-37,39,40}
- Determine state of readiness^{31-39,50}
- Encourage behavior change^{31,33-39,42}
- Screen for disordered eating patterns and malnutrition^{32,33,51}
- Address aspects of the ICF model⁵²
- Provide with referral sources as needed

- What we **can't** do

- Provide specific nutritional counseling^{32,40,46,53}
- State that eating a certain way will treat or prevent an illness
- Diagnose an eating disorder
- Utilize any of the following terms^{46,53}
 1. Dietician
 2. Licensed Dietician
 3. Certified Nutritionist
- Advertise provision of nutrition services^{46,53}
- Utilize CPT codes: 97802-4, G0270/1⁵⁴

Where is the proverbial line?



- Within Scope

- “Like all HCPs, PTs are being challenged to address the health and wellness status of our patients and clients, *especially in situations in which these behaviors may not be directly related to the diagnosis for which the patient is being seen*”³⁵
- Treatment of pain^{32,39,55}

- Out of scope

- Treatment specifically of HTN*³⁵
- Diabetes specific care*³⁵
- Non-alcoholic fatty liver disease*⁵⁶
- Heart Failure*^{37,45}
- Treatment of decreased bone density*^{32,39}
- Those with co-morbid mental health conditions*³⁹
 - Firth et al in a meta-analysis showed greater effects on depression when diet was led by dietitian⁵⁷

*These all warrant referral. However, you **can** initiate the conversation of what constitutes a healthy diet within context



“ The provisions of this chapter shall not apply to a person who owns a health food store or who manufactures, distributes, or sells health foods, dietary supplements, or vitamins nor shall the provisions of this chapter be construed to affect **any other person who provides nutritional or dietary advice** or sells nutritional or dietary supplements **if the person does not use the title dietitian, licensed dietitian, or certified nutritionist.** ”

[KY Dietician & Nutritionist practice act⁵³](#)

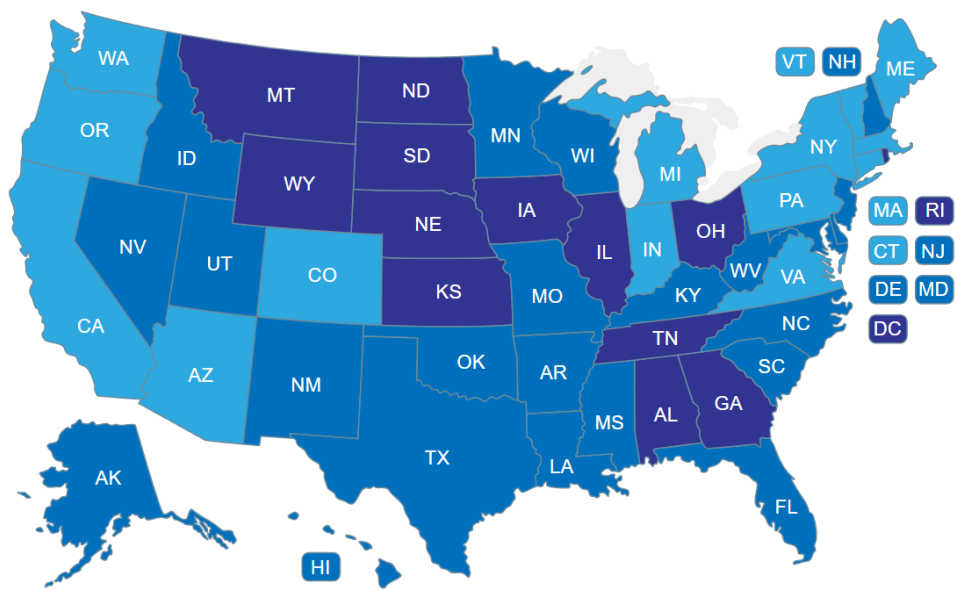




“ Fundamental to the Code of Ethics is the special obligation of physical therapists to empower, educate, and enable those with impairments, activity limitations, participation restrictions, and disabilities to facilitate greater independence, health, wellness, and enhanced quality of life. ”

[FSBPT Model Practice Act⁵⁹](#)





■ Exclusive Scope of Practice States

■ Title Protection States

■ No Law or Certification States

[American Nutrition Association⁶¹](#)

[NANP Legislative Affairs Division⁶⁰](#)

Referrals:

<https://www.eatright.org/find-a-nutrition-expert>⁶²

State Regulation of Nutrition Practice

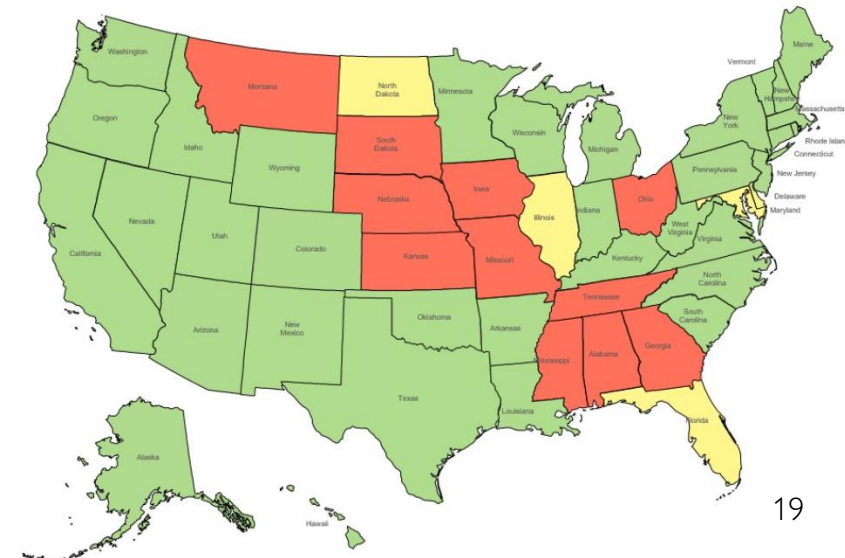
This map can only generalize complex state laws. Select a state to see a summary of its law. Read the entire state law for full detail.

Neither this map nor any other information on this website constitutes legal or career advice. This is simply an interpretation of state statutes and regulations, and cannot substitute for legal counsel.

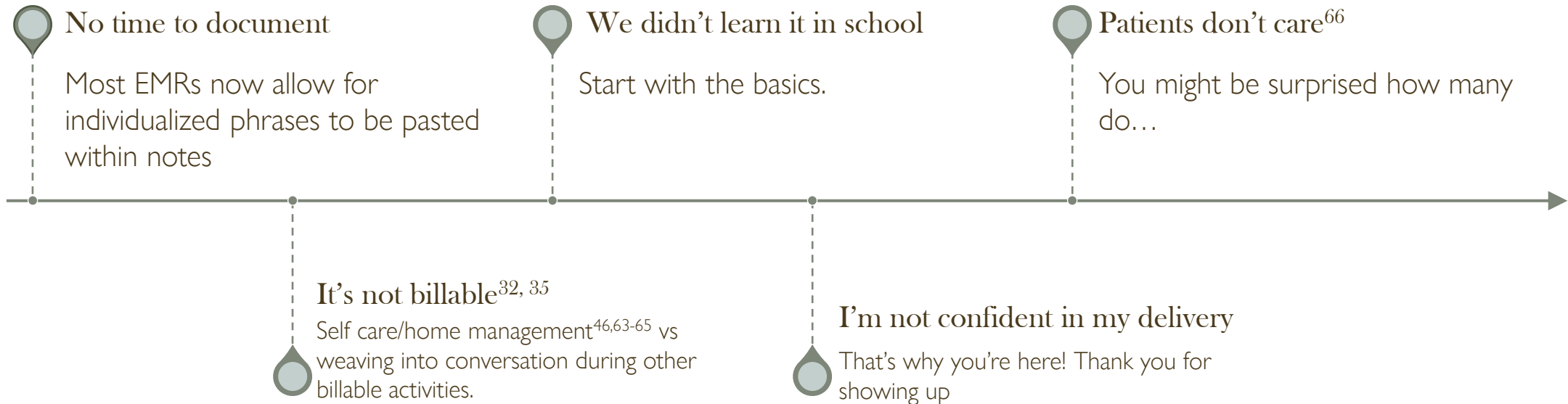
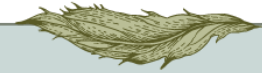
KEY

- It is illegal to perform individualized nutrition counseling unless licensed or exempt. Effectively only RDs are eligible for licensure.
- It is illegal to perform individualized nutrition counseling unless licensed or exempt. There is a pathway to licensure for CNSs, RDs, and other advanced nutritionists.
- It is legal for all to perform individualized nutrition counseling, other than medical nutrition therapy in some states. Some states offer state licensure or state certification to CNSs, RDs, and other advanced nutritionists.

SELECT A STATE ▼



Clinician push back



The Current State

- 78% of consumers who get information from their HCP report making a change to their eating habits as a result of those conversations⁶⁶
- Review of nutrition basics with practicing medical professionals^{67,68}
 - 38% correctly identified calories per gram of each macronutrient
 - <9% recommended protein intake
 - 31% for healthy BMI
 - **93% of those who self identified high nutrition knowledge were unable to correctly identify both daily servings of fruits/veggies and sugar limits**

course, but for nutritional expertise.⁸ Physicians with no genuine expertise in, say, neurosurgery are neither likely to broadcast detailed opinions on that topic nor to have their “expert” opinions solicited by media. Most topical domains in medicine enjoy such respect: we defer expert opinion and commentary to actual experts. Not so nutrition, where the common knowledge that physicians are generally ill trained in this area is conjoined to routine invitations to physicians for their expert opinions on the matter. All too many are willing to provide theirs, absent any basis for actual expertise—such as

The Basics^{47-49,69}



Total caloric intake	Protein	Fats	Carbohydrates	Other
<p>1. DRI calculator for HCPs⁷⁰</p> <p>2. Harris-Benedict equation⁷¹⁻⁷³</p> <p>3. WHO^{73,74}</p> <p>4. Mifflin-St. Jeor⁷⁵⁻⁷⁸</p> <p>5. Body weight multipliers^{49,79,80}</p>	<p>10-35% of daily caloric intake⁴⁷⁻⁴⁹</p> <p>FDA RDA: .8g/kg (.36 g/lb)⁴⁷</p> <p>* >RDA for added health benefit, in those dieting, and in sport⁸¹⁻⁸⁹</p>	<p>20-35% of daily caloric intake⁴⁷⁻⁴⁹</p> <p>*WHO recommends <30%⁶⁹</p> <p>Sat. Fat: <10% of total daily calories^{47-49,69}</p> <p>Limit Trans Fats^{47-49,69}</p> <p>Omega 3s: 500 mg⁹</p>	<p>45-65% of daily caloric intake⁴⁷⁻⁴⁹</p> <p>Added sugar: <10% of calories^{47-49,69} (<50g)⁹⁰</p> <p>*<5% for additional health benefit⁶⁹</p> <p>Fiber: 14g per 1,000 calories consumed^{47,91}</p>	<p>Sodium: <2,300 mg^{47,49,90}</p> <p>Cholesterol: <300 mg⁹⁰</p> <p>Calcium: 1,300 mg⁹⁰</p> <p>Vitamin D: 600 IU⁴⁷</p>

How we get there



Screening/subjective exam

- Ask about typical eating habits
- Determine if the patient believes their diet is affecting their overall health status
- Determine if they think their eating habits affect their energy, mood, or sleep hygiene



[Image link \(The Go-To Physio\)](#)

Treatment sessions

- Blend this with your typical treatment strategy
- Discuss your favorite meal or what you have planned for lunch/dinner
- Review easy recipes
- Talk about someone you know who has been making great progress
- Ask about their favorite healthy recipe

Navigating patient barriers

- Utilize compassion, coaching techniques, and patient empowerment
 - Many people just need a few potential solutions to choose from
 - Reflect and explore TOGETHER
- Refer out when complex
 - Have a wide interprofessional network
 - Each will have their own comfort level regarding which type of practitioner they prefer

Screening Tools



- Starting the Conversation⁹²
- Diet Quality Index⁹³
 - Similar to Healthy Eating Index⁹⁴
- Social Determinants⁹⁵
 - HRSN developed by CMS⁹⁶
- Mini Nutritional Assessment⁹⁷
- Eating disorder Screen for Primary care (ESP) vs SCOFF⁹⁸
- Duke Activity Status Index (DASI)^{67,99-101}
- PHQ¹⁰³
- SF-36^{104,105}

**AND MANY
MORE!!**



Tracking



[Image link](#)

Free apps

- Eat This Much
 - Input the calories you want to eat, a style of eating you would like to follow, and how many meals you would like to consume
- MyFitnessPal
 - Free, very popular, syncs with other apps, can scan the barcode on your food, will provide an estimated caloric intake when setting your goals
- Nutritionix
 - Useful for those who eat out frequently, barcode scanner, can input your own recipes, developed by dieticians

Learning the language

- Determine what is in foods commonly consumed
- Compare to other foods they also enjoy
- Get used to a style of eating to apply principles throughout the lifespan
- Estimates of daily intake without strict tracking
- Start to visualize proper portion sizes

Objective > Subjective

- At least in the beginning
- More data helps us see trends
- Allows them to learn what happens to their weight at certain activity levels and caloric intakes
 - Guides their change while reducing fear of certain foods
 - Monitor trends such as sleep, stressful events, a meal out, etc.
- Once they have an understanding, work away from tracking

[Image link](#)

Maintenance¹⁰⁷⁻¹¹⁰



National Weight Control Registry

- First one in US in 1993, now over 10k participants¹⁰⁷
- \geq 90% of participants modified food intake and increased physical activity¹⁰⁸
 - **WALKING** was most frequently reported!¹⁰⁸
 - ~55% used a formal program or professional assistance¹⁰⁹
- Those who keep it off: 78% eat breakfast, 75% weigh themselves at least weekly, 90% continue to exercise an average of 1 hour per day¹⁰⁸
- Due to high variability in amount of exercise/calories burned, unable to recommend specific exercise prescription¹¹⁰
- Activity level is related to the magnitude but not duration of weight loss¹¹⁰

Systematic Review of 52 articles¹⁰⁷

- 5 countries involved:
 - US, Portugal, Germany, Finland, and Greece
- Most commonly reported:¹⁰⁷
 - 1) Regular breakfast and meal frequency
 - 2) Increased fiber and vegetables
 - 3) Reduced portions
 - 4) Conscious food selection (reduction of intake of sugar, fat, etc.)
 - 5) Rule setting
 - 6) Planning vs keeping healthy foods at home

Secondary and tertiary prevention

- Health markers improve with as little as 3-5% weight loss - greater benefits at 10%³²
- Those of high BMI that are active exhibit lower health risk than those with low BMI¹¹¹
- Improved biomarkers with activity independent of weight loss¹¹¹
- HCPs associate clients who are obese with being lazy and weak-willed.¹¹²
- “Health promotion is not only critical for otherwise ‘healthy’ people but also those with chronic conditions who need to be in the best of health to maximize function, tissue healing, and repair.”³⁷
- Hormone profiles and cognitive changes^{49,113-115}
 - Some of these changes are sustained post weight loss...¹¹⁴

Primary prevention

- Allow children the opportunity to say no to more food
 - They are better at understanding hunger cues, yet we detract from that by providing rigid mealtimes and cultural pressure to clean the plate¹¹⁶
- When possible, avoid food/sugary drinks as a reward
- Late childhood/puberty is a time with high potential for fat gain⁴⁹
 - Hyperplastic vs hypertrophic obesity
- When energy intake exceeds expenditure, fat cells grow in size. Once they hit their limit, if intake continues to exceed expenditure, fat cells may increase in number⁴⁹
 - During fat loss, size reduces but not number
 - More fat cells = greater difficulty maintaining normal body weight
 - Hormonally and easy to fill shrunken cells (higher proportion of storage sites)
- If intake continues to exceed expenditure, fat is deposited in organs (esp. heart and liver)⁴⁹
- US Preventive Services Task Force – routine screening of obesity beginning at 6 y/o¹¹⁷
 - Physical therapists specifically listed
 - Pediatric interventions most successful when other family members included

Patient Barriers/FAQs

1. How do I know how many calories I should be taking in?
2. There's too much information out there!
 - Totally agree – here's some information you may find helpful
3. Information is contradictory ... how do I know where to start?
 - Let's talk a little about your life and what might fit best OR what most intrigues you*
4. I don't enjoy [insert activity here]
 - ANY activity you find enjoyable or at least tolerable is a start!
 - Consider incorporating friends, family, pets
 - Try a new activity
5. What works for me doesn't work for [insert friend/family member here]
6. I don't like healthy food – or my children/significant other doesn't

Behaviors to target/get people started

1. Reduce energy intake

- Practice portion control
 - Measuring food (scales, hand size, utilizing specific containers)
 - Lower calorie condiments
 - Simply eat at home more often
 - Share meals while out
- Replace processed foods with whole food options
 - Make it fun to imagine seasoning this item
 - What other flavors might it mix well with?
- Reduce sodium
 - Rinse canned vegetables/meats

- Consider low/reduced/no-salt-added canned goods and salt free seasonings

2. Increase fruits and vegetables

- Try something unfamiliar to you

3. Select fortified foods for important nutrients

4. Decrease consumption of sweetened beverages

- Especially sugar added... look at sugar added when purchasing frozen fruit/juices as well

5. Food label education

MINDFULNESS



- Why am I eating right now?
- Am I actually hungry?¹¹⁶
 - Am I simply bored?
 - Should I have some water or go for a walk instead?
- What nutrients does my body need?
 - How much have I eaten today?
- How is my stress? How did I sleep last night?
 - These can drastically affect hunger cues!^{118,119}

❖ Reflect afterward





“ No other area of the national health probably is as abused by deception and misinformation as nutrition. Many travesties cheat the public of enormous sums of money, and of good health as well. ”

1969 – White House Conference on Food, Nutrition, and Health¹²⁰
as seen in How Not to Diet by Dr. Michael Greger¹²¹



Key take aways

Call to action:

1. Our job is to synthesize and assist with application
2. Start with larger concepts
3. Provide boundaries and strategies
4. Consider starting with simple swaps or small increases in activity
5. Be a positive role model & behavior change agent. Primary prevention is VITAL!

Common complaints/barriers:

1. I'm overwhelmed!
2. Social situations/peer pressure
3. Inadequate access to healthy food/safe places to exercise



“ Not only is [the ileum] central to the chief organ involved in specialized nutrition support, but it is a complex, yet elegant system that:

- (1) is interdisciplinary with actions coordinated to achieve a common goal
- (2) looks to the future by mentoring the next generation of leaders
- (3) constantly seeks evidence of its effectiveness and accordingly adjusts its practice, and
- (4) strategically forges synergistic partnerships with other habitants within its environment.

As relevant within many other realms, it remains true that much can be learned from looking within.”

[American Society for Parenteral and Enteral Nutrition 33rd Presidential Address¹²⁰](#)



Case Study 1

- 32 y/o male
- ~9 month history of dieting with macro based bodybuilding coach
 - No intention of competing
- Presented to PT with reports of binging on protein bars with 10lb weight gain
 - At that time also reported high levels of fatigue, feeling cold, frequent thoughts of food, feeling heavy/weighted down during activity
- Had lost ~40 lbs working with current coach
 - Reported fear of checking in with the coach, despite having paid for the year in advance
 - 230 g protein, 120 g carbs, 45 g fat (1 re-feed day on the weekend)
 - If not losing weight, would drop 100 calories or increase activity.
- Following red flag screening, was referred to onsite primary care to assess kidney function, thyroid panel, etc.

Case Study 2

- 48 y/o female
- In PT for chronic back pain. During initial evaluation, reports considering breast reduction to alleviate back pain
 - Reviewed outcomes with patient, agreeable to trial of conservative care prior to surgeon consult
- High levels of stress
 - Works in a corporate environment, being considered for VP role
 - Large workforce cuts, company attempting to save \$1 billion in calendar year
 - 3 dogs, all special needs
 - Aging father in another state with illness which may be terminal
 - Possible personal cardiac condition, which she admits to active avoidance of learning further information about
- Once she felt safe, nutrition and activity conversation arose
- Back pain resolved, now only considering surgery for aesthetic reasons

Case Study 3

- 30 y/o female with chronic B knee and back pain.
- Data scientist with stringent deadlines on a 2 person team
 - Pressure not to take time off for vacations or appointments
 - Patient and spouse both working from home
 - 3 children: 3 months to 3.5 years old
 - Great squat form (DL) despite poor mobility, isolation, and stabilization
 - Trendelenburg with SLS, pain and difficulty performing glute set, unable to volitionally contract pelvic floor or abdominal musculature post partum since 2nd child
 - Feels unable to step away from desk or child care
 - Required EXTREMELY small movement breaks
- Near the end of our time together, she was found to have elevated A1C and physician recommended low carb. She had some questions about how low, other ways to improve glucose response, and had started losing weight. Her biggest fear was what to do when she hit a plateau.



Supplemental Materials

Patient friendly resources:

1. <https://www.who.int/news-room/fact-sheets/detail/healthy-diet>
2. <https://health.gov/>
3. <https://www.myplate.gov/>
4. <https://www.foodnetwork.com/recipes/food-network-kitchen/> (can favorite recipes, sort by ingredients, time to make, equipment used, etc. Nutrition info, ingredient substitutions, and shopping list included)
5. <https://ask.usda.gov/s/> (free form questions in search bar, has article suggestions as well)
6. https://www.nhlbi.nih.gov/health/educational/lose_wt/wtl_prog.htm (NIH "Selecting a Healthy Weight Loss Program" Guide)
7. <https://www.apta.org/fit-for-practice/restoration/nutrition-strategy-fuel-work-play> (downloadable guide from EXOS [open access]; *you will have to download PDF from APTA to provide*)
8. www.nutritionfacts.org (short articles/videos by topic)

Calculators:

1. https://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm (additional links/resources included)
2. [Calcium calculator and bone healthy recipes](#)
<https://www.osteoporosis.foundation/educational-hub/topic/calcium-calculator>
<https://www.osteoporosis.foundation/patients/recipes>
3. <https://www.nasm.org/resources/calorie-calculator>

Books:

1. [UnDo It! How Simple Lifestyle Changes Can Reverse Most Chronic Diseases](#) By Anne and Dean Ornish (audiobook also available)
2. [How Not to Diet](#) by Michael Greger (top 50 on Amazon)



Supplemental Materials

1. **Physical Activity Guidelines for Americans
2nd edition**
 - **Executive summary**
https://health.gov/sites/default/files/2019-10/PAG_ExecutiveSummary.pdf
 - **Top 10**
<https://health.gov/our-work/nutrition-physical-activity/physical-activity-guidelines/current-guidelines/top-10-things-know>
2. **Move Your Way® Community Resources
(English and Spanish Versions)**
<https://health.gov/our-work/nutrition-physical-activity/move-your-way-community-resources>
3. **ACSM Protein Handout**
<https://www.acsm.org/docs/default-source/files-for-resource-library/protein-intake-for-optimal-muscle-maintenance.pdf>
4. **Moderate vs vigorous physical activity**
<https://www.cdc.gov/physicalactivity/basics/measuring/index.html>
5. **Mifflin St. Jeor differences in physical
activity levels explained**
<https://www.ncbi.nlm.nih.gov/books/NBK278991/table/diet-treatment-obes.table12est/>



Supplemental Materials

Clinician resources

Blog posts:

1. <https://www.webpt.com/blog/should-pts-provide-nutrition-services>
2. <https://www.apta.org/article/2018/08/15/nutrition-and-physical-therapy-a-powerful-combination>
3. <https://www.apta.org/patient-care/public-health-population-care/nutrition/pts-role-in-nutrition-and-diet>
4. <https://www.apta.org/apta-magazine/2017/09/01/nutrition-a-portion-of-pts-menu-of-services>

Comprehensive articles:

1. [Berner et al^{32,33}](#)
2. [Bezner³⁵](#)
3. [Dean^{36,37,39}](#)

For those of you in academia:

1. [DiMaria-Ghalili et al⁴²](#)
2. [Dean et al³⁸](#)

Inpatient settings:

1. [Tappenden 2013 \(has an interdisciplinary clinical model pathway with figures and action steps\)⁴¹](#)
2. [Shoemaker et al⁴⁵](#)
3. [Sriram et al 2017 \(reduction of re-admits with malnutrition screening, education, and support\)¹²³](#)

Cardiac Rehab:

1. [Shoemaker et al⁴⁵](#)
2. [Dean and Lomi³⁷](#)

Geriatrics:

1. [DiMaria-Ghalili¹²⁴](#)
2. [Baier¹²⁵](#)

Wound healing:

1. [Berner³²](#)



Supplemental Materials

Additional Clinician Resources:

1. [APTA Health Promotion and Wellness Council](https://www.apta.org/apta-and-you/councils/council-on-prevention-health-promotion-and-wellness)
<https://www.apta.org/apta-and-you/councils/council-on-prevention-health-promotion-and-wellness>
2. [APTA/Dr. Berner podcast](#)
 - **Audio:** <https://www.apta.org/apta-and-you/news-publications/podcasts/2021/integration-of-nutrition-in-physical-therapist-practice-an-author-interview-with-dr-patrick-berner>
 - **Text version with links to PTJ articles:**
<https://www.apta.org/article/2021/06/15/nutrition-interview-berner>
3. [Crossing the Quality Chasm: A New Health System for the 21st Century](https://www.ncbi.nlm.nih.gov/books/NBK222274/)
<https://www.ncbi.nlm.nih.gov/books/NBK222274/>
4. <https://theana.org/events> (Free webinars from the American Nutrition Association)
5. <https://foodinsight.org/wp-content/uploads/2018/05/2018-FHS-Report.pdf> (Food and Health Survey)
6. <https://nutritionfacts.org/> (can find articles/videos to send)
7. [NIH Nutrient Recommendations](https://ods.od.nih.gov/HealthInformation/nutrientrecommendations.aspx)
<https://ods.od.nih.gov/HealthInformation/nutrientrecommendations.aspx>
8. [Biden-Harris Administration National Strategy on Hunger, Nutrition, and Health \(Sept. 2022\)](https://www.whitehouse.gov/wp-content/uploads/2022/09/White-House-National-Strategy-on-Hunger-Nutrition-and-Health-FINAL.pdf)
<https://www.whitehouse.gov/wp-content/uploads/2022/09/White-House-National-Strategy-on-Hunger-Nutrition-and-Health-FINAL.pdf>
9. [YouTube - White House Challenge to End Hunger and Build Healthy Communities Kickoff](https://www.youtube.com/watch?v=esNepS6w9Uk)
<https://www.youtube.com/watch?v=esNepS6w9Uk>

Personal Favorites:

1. Berner - foundations for PTs^{32,33}
2. Bezner solo article from 2016 – VERY comprehensive³⁵
3. The newer Dean articles incorporate findings from global health summits, etc. Speak to her; this woman will light your passion on fire!³⁶⁻³⁹
4. DiMaria-Ghalili – focus on multidisciplinary work and academia⁴²
5. Jansen – for when you need a little sympathy¹¹⁵
*reviews obesity from a psychology lens yet very applicable tidbits to relay to patients for improving their success!

White House Challenge to End Hunger and Build Healthy Communities¹²⁶

- **Pillar 1: Improve Food Access and Affordability**
- **Pillar 2: Integrate Nutrition and Health**
 - Expand Medicare and Medicaid beneficiaries' access to “food is medicine” interventions, as well as nutrition and obesity counseling
 - **Health care providers** are encouraged to screen patients for food and nutrition insecurity, to refer them to resources, and to talk to them about their nutrition and physical activity so patients have the tools they need to stay healthy.
 - **Health professional training schools and organizations** are encouraged to teach future health care professionals how to help their patients make healthy food choices and be more physically active and how to screen them for food and nutrition insecurity and refer them to resources.
- **Pillar 3: Empower All Consumers to Make and Have Access to Healthy Choices**
- **Pillar 4: Support Physical Activity for All**
- **Pillar 5: Enhance Nutrition and Food Security Research**

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Thank You!

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