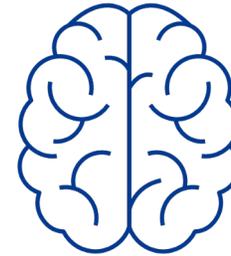


Healthy Habits Made Simple: Fitness and Nutrition for Adults with Down syndrome

Dominica Nichols, PhD, RD, LDN
Nicolas Oreskovic, MD, MPH
MGH Down Syndrome Program

March 2026



Outline: What to Expect

Adults with Down syndrome may face unique challenges with fitness, nutrition, and overall health, especially as they age. This workshop will focus on practical strategies for staying active, eating well, and building healthy routines.



Group Discussion

Time to work with our **Building Healthy Habits tool** and to discuss what motivates and what discourages you.



Learning and Listening

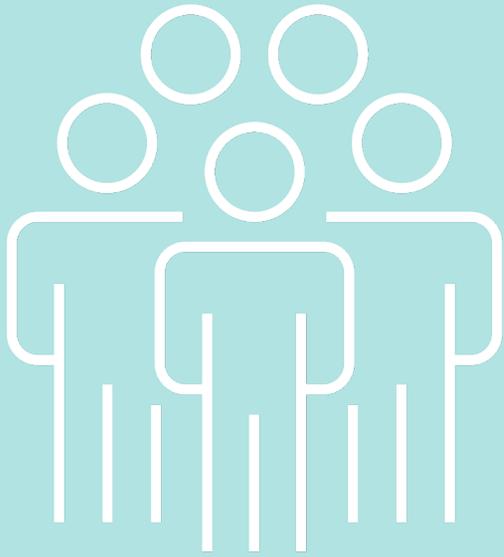
Dr. Oreskovic and Dr. Nichols will share their experience and ideas to partner with and support adults.



Q &A

An opportunity to ask questions and share feedback.





Group Discussion



Building Healthy Habits tool

Habits:

1. What motivates you to do or work on this habit?

1. What seems to get in the way?
2. Has anything helped you address these barriers?

1. What TOPICS are missing?



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TOPIC	Why is this Important to me?	What makes it hard to remember my goal? Or, what makes it hard to follow through on my goal?	What solutions have I found to practice this goal? Who have I found that can support me?
Healthy Drinks (water as a focus) 	<input type="checkbox"/> I am not sure	<input type="checkbox"/> I am not sure	<input type="checkbox"/> I am not sure
Making Space for Vegetables and Fruits 	<input type="checkbox"/> I am not sure	<input type="checkbox"/> I am not sure	<input type="checkbox"/> I am not sure
Moving More 	<input type="checkbox"/> I am not sure	<input type="checkbox"/> I am not sure	<input type="checkbox"/> I am not sure



Building Healthy Habits tool

Example from self-advocate:

She offered the idea of an “I am not sure” box. Sometimes not knowing why something is important, why something is hard, or what solutions might work is helpful information!

Her ideas were very helpful. She shared solutions like **keeping her water bottle with her** and **walking with friends** that help her drink more water and move more.

TOPIC	Why is this Important to me?	What makes it hard to remember my goal? Or, what makes it hard to follow through on my goal?	What solutions have I found to practice this goal? Who have I found that can support me?
Healthy Drinks (water as a focus)	*Water is healthy and drinking water helps you stay hydrated.	I am not sure.	*Having my YETI reminds me to drink more water.
Making Space for Vegetables and Fruits	*Because they are healthy.	I am not sure.	*Adding veggies to an omelet *My parents make lots of different veggies for me to try *Dominica and Dr. Brian give me tips on healthy eating
Moving More	*I feel sweaty, and a lot stronger after I work out. *Moving helps me sleep better.	*Some days I am feeling lazy and don't want to move. *Some days I am too tired. *I don't work out because I am too busy.	*Sasha because I dance with her during music group. *I use the Peloton app for walking, stretching, and meditations. *I have started working out with a trainer at Inclusive Fitness. *I go for walks with family and friends. *I do activities with Athletes Unlimited through Newton Parks and Rec (zumba, yoga, track, dance parties, etc.).



Building Healthy Habits tool: time for discussion



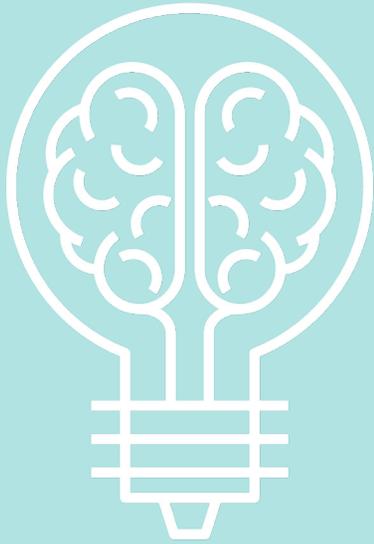
Break into groups to identify MOTIVATORS, BARRIERS, and IDEAS

20 min

1. What motivates you to do or work on this habit?
1. What seems to get in the way?
2. Has anything helped you address these barriers?
1. What TOPICS are missing?

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Learning and Listening



Definitions: Physical Activity vs Exercise vs Physical Fitness

- ★ **Physical activity** = Any bodily movement generated by skeletal muscles that results in caloric expenditure above resting rate
- ★ **Exercise** = a subcategory of physical activity; physical activity that is structure, planned, and done with the intent of providing health benefits
- ★ **Moderate-to-Vigorous Physical Activity (MVPA)** = a level of physical activity intensity, “*your heart is racing, you feel short of breath, you are sweating, you can talk but cannot sing or whistle*”
 - Thus... all exercise is physical activity; not all physical activity is exercise
 - Both have health benefits; *exercise* usually necessary to achieve MVPA intensity
- ★ **Physical Fitness** = A measurable state of health performance (endurance, strength, power, balance) achieved through physical activity and exercise

Physical Activity



Exercise



Physical Activity in Down syndrome

Unique Circumstances:

- Physiology/Biology
 - unique metabolism
 - unique gait
 - low muscle tone
- Co-occurring medical conditions
 - joint conditions
 - sleep apnea
 - thyroid disease
- Motivators and Barriers
 - companionship
 - boredom
 - routine
 - transportation



Adult Physical Activity Guidelines & Current Levels of Physical Activity



Recommendations:

- 150+ minutes MVPA/week
- **AND** 2+ days muscle strengthening/week
- Limit *Sedentary Time*

***The guidelines for individuals with intellectual disabilities (including Down syndrome) are the same as for the general population

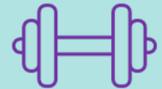
What we know:

(aka, current levels of physical activity in individuals with Down syndrome)

- Low levels of health enhancing physical activity
 - ~40 minutes a week of MVPA
 - Shorter bouts of MVPA
 - only 10% of adults meet guidelines
 - A lot of sedentary time (>6.5 hrs/day)
- Lower than people without DS
- Likely declines with age
- Most common form: walking



Adult Physical Fitness Guidelines



Conference Duration:

2 days 

Total in Attendance:

27 

Speaker Demographics

21% 
International

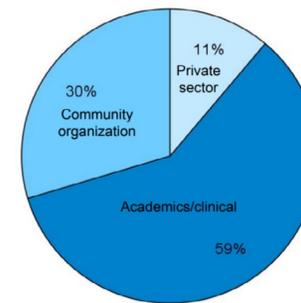
43% 
Female

Countries in Attendance



Attendees by Professional Background

Private sector Academics/clinical Community organization



- First expert-recommended fitness guidelines specific to DS (includes recommendations for adults) published in 2025
- International expertise
- Collaborative: scientific, community, and business representation
- Recommendations for fitness health focus on 3 core components:
 - ❖ **Aerobic**
 - ❖ **Muscle**
 - ❖ **Balance**



Physical Fitness Recommendations for adults with DS

TABLE 1A | Recommended **guidelines** for promotion of physical fitness for persons with DS.

Age (years)	Category	Recommendation	Strength of evidence
5-12	Aerobic	Daily movement encouraged, with a goal of at least 30 min or more at a moderate or greater intensity	Weak to Moderate
	Muscle	Daily muscle use, including any combination of play activities, sports that use body weight, or full body exercises	Weak to Moderate
	Balance	At least twice weekly non-structured exercises, multi-component physical activities, or physical play activities	Moderate
13-17	Aerobic	Daily movement encouraged, with a goal of 30 min or more at a moderate or greater intensity	Weak to Moderate
	Muscle	At least 3 days of muscle use, including any combination of play activities, sports that use body weight, or full body exercises	Moderate
	Balance	2-3 times per week; 15-20 min sessions	Moderate
18+	Aerobic	Daily activity with a goal of achieving at least 150 min per week of moderate or higher intensity movement	Weak to Moderate
	Muscle	2-3 times per week; 2-3 sets of 6-12 repetitions at moderate to hard intensity; 30-60 min sessions	Moderate to Strong
	Balance	2-3 times per week; 20-30 min sessions	Moderate

TABLE 1B | **Examples** of physical fitness exercises for persons with DS by age and category.

Age (years)	Category	Examples
5-12	Aerobic	Playground activities (tag, jungle gym, hopscotch), individual sports (martial arts, swimming), team sports (soccer, basketball, kickball)
	Muscle	Bodyweight, resistance bands, light weights, obstacle courses
	Balance	Playful activities like hopping, skipping, single-leg stance, balance beam, throwing and catching
13-17	Aerobic	Running, stationary bicycle, outdoor bicycle, swimming, hiking, dance, team sports, individual sports, whole body exercise, roller skating/inline skating/skateboarding, cross-country skiing
	Muscle	Bodyweight, resistance bands, gym equipment, obstacle courses
	Balance	Tandem stance, single-leg squats, unstable surfaces, yoga, dance, circus and gymnastics activities, lateral tilts, front-to-back tilts, over-under passes with ball, throwing and catching
18+	Aerobic	Brisk walks, running, stationary bicycle, outdoor bicycle, rowing, swimming, water aerobics, interval training, dance, hiking, individual sports, whole body exercises, roller skating/inline skating/skateboarding, cross-country skiing
	Muscle	Machines, free weights, resistance bands, bodyweight
	Balance	Heel-to-toe walking, tandem stance, single-leg stance, weight shifts, balance boards, Tai Chi, adapted dance, gymnastics, Pilates, walking on low balance beam, lateral tilts, front-to-back tilts, over-under passes with ball



“Active Living”

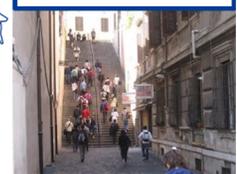
- ❑ Use the existing **built environment** to maximize physical activity
- ❑ Build into daily & weekly **routines** - eg, walking to work, shopping
- ❑ *Strategy:* Get off one stop early on **public transportation**
- ❑ *Strategy:* Take **walks** around the neighborhood
- ❑ *Strategy:* Take the **stairs**
- ❑ *Strategy:* Go shopping with your family
- ❑ *Strategy:* Help out with **chores** (sweeping, vacuuming, carrying groceries)



Public Transportation
& Sidewalks



Pedestrian Spaces



Bicycle Lanes



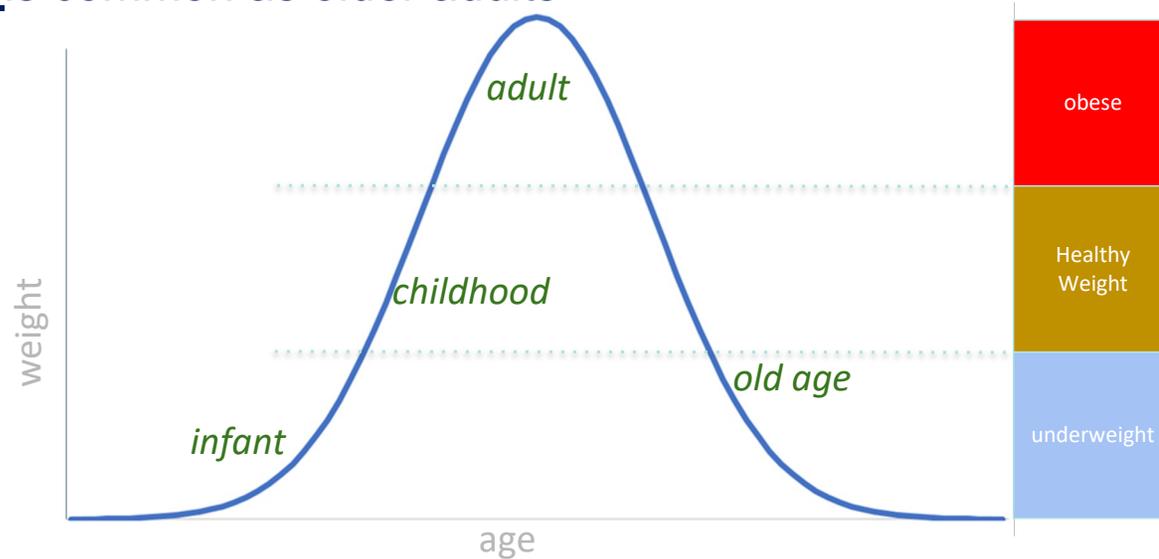
Physical Activity & Fitness Takeaways for healthy living

- Try to achieve physical activity recommendations [150+ minutes MVPA/week]
- Limit sedentary time
- Daily physical activity is good and has health benefits but rarely gets you to MVPA level
- That means you must *also* exercise regularly!
- Remember 3 components of fitness for optimal healthy aging (aerobic, muscle, balance)
- Identify common barriers to physical activity in DS and possible solutions to overcome barriers [think about *all* barriers: personal, family, cultural, structural, policy barriers]
- Think about motivators [companion, music, dance, routine]
- Build exercise & fitness training into weekly routines
- Use existing infrastructure (built environment) and programs (day programs, Special Olympics)
- Expectations: recognize that PA in DS is not the same as in general population [physiology of DS]



Weight status during adulthood in DS

- › Risk for underweight as infants and young children
- › High risk for overweight and obese as adults (near universal)
- › ***BUT...*** weight loss is common as older adults



Importance of Managing of Co-occurring medical conditions



Untreated or undertreated common medical conditions in DS **can impact healthy aging:**

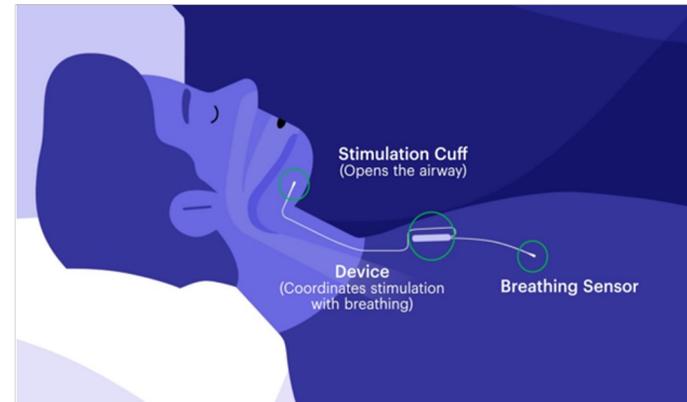
- ❖ Dental conditions - missing teeth and high rates of periodontal disease can impact nutrition and available nutrients needed for healthy aging (protein and vitamin requirements)
- ❖ Thyroid dysregulation - can present at any age, can impact diet, physical activity, sleep, cognition
- ❖ Celiac disease - can present at any age, can impact diet, behavior (can mimic cognitive problems)
- ❖ Sleep apnea
- ❖ Osteoporosis - importance of healthy diet and physical activity to lower risk of fractures
- ❖ Vision and Hearing - can impact physical activity
- ❖ Mood (depression/anxiety/OCD) - can impact diet, physical activity, sleep
- ❖ Alzheimer's disease - can impact diet , physical activity, sleep



Obstructive Sleep Apnea in Down syndrome



Positive Airway Pressure Device



Hypoglossal Nerve Stimulator

- Very common in Down syndrome (up to 80% of adults with DS)
- Onset throughout the lifespan, including adulthood
- Easy to diagnose
- Important to diagnose: Could mimic or worsen neurologic disease, behavior problems, mood disorders
- Can impact physical activity and diet/appetite
- Treatment options (positive airway pressure, hypoglossal nerve stimulator)



Healthy Sleep Strategies



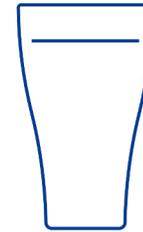
- Bedtime routine
- Limit screen use prior to bed
- No screens in bedroom
- Limit food prior to bed
- Use bathroom prior to bed
- Avoid caffeine (soda, coffee, tea, chocolate) prior to bed
- Get enough sleep (at least 8 hours/night in adults)
- Diagnose and treat medical conditions that impact sleep (sleep apnea, thyroid disorders, depression)
- Wear your CPAP/BiPAP/AutoPAP device
- White noise machines can be helpful



Nutrition and Healthy Eating

Unique Circumstances:

- Physiology/Biology
 - **unique metabolism**
 - low muscle tone
- Co-occurring medical conditions
- Motivators and Barriers
 - companionship
 - boredom
 - routine and preference for sameness
 - transportation



Unique Metabolism

- Resting metabolism is estimated to be 10-15% less in individuals with Down syndrome compared to peers of the same height, weight, age, gender.
- The **health impacts** of portion distortion are bigger if you have Down syndrome.
- The **health impacts** of having more calorie dense and ultra-processed foods and drinks are bigger if you have Down syndrome.
- The **benefits** of a nutrient-dense diet are similar for children and adults with and without Down syndrome.



DOWN SYNDROME PROGRAM
www.massgeneral.org/downsyndrome

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Nutrient Density for People with Down Syndrome

Nutrient dense foods have a lot of vitamins and minerals without a lot of calories. It is especially important for people with Down syndrome to eat nutrient dense foods. Read this handout to learn how nutrient dense foods help you live a happy, healthy life.

WHAT IS NUTRIENT DENSITY?

Nutrient dense foods are good "bang for your buck." They have a lot:

- Vitamins
- Minerals
- Fiber

WHY IS NUTRIENT DENSITY IMPORTANT FOR PEOPLE WITH DOWN SYNDROME?

- Studies show that individuals with Down syndrome use 10 to 15 % less energy when at rest than peers of the same size, age and gender.
- People with Down syndrome need the same nutrients, but they have fewer calories to spend if they want to keep the same weight.
- Nutrient density is especially important for those trying to lose weight or people with hypothyroidism.

HOW DO I CHOOSE NUTRIENT DENSE FOODS?

- **Emphasize Quality** – Choose more nutrient dense varieties of products when available.
- **Encourage Diversity** – Eat foods from at least 3 food groups at meals, and 2 at snacks.
- **Implement Gradually** – Ease the household into healthier options, one or two at a time.
- **Be Strategic** – Separate the changes someone will and will not make.
- **Foster Creativity** – Make healthy options fun and exciting.



WHAT ARE NUTRIENT DENSE FOODS?

- Brightly colored fruits and vegetables
- Whole-grain, fortified and fiber-rich grains
- Low-fat and fat-free milk, cheese and yogurt
- Lean meats, poultry and fish
- Eggs
- Beans
- Nuts

HOW CAN I MAKE NUTRIENT DENSE FOODS FUN?

- **Rock Star Foods** – Give pictures of Rock Star Foods (nutrient dense foods) to kids and let them create a chart showing which ones members of the family like best.
- **Meal Makeover** – Challenge people to add more nutrient-dense foods to a meal.
- **Mapping Out MyPlate** – Determine how well-balanced your diet is by checking off the number of servings you had from each food group during the day.

If you have any feedback on this document, please contact: nutrition@massgeneralchildren.org
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photo courtesy of www.freshlightnutrition.com

Written by: Caitlin Hughes, RD, LD
This document is intended to provide health-related information and should not be relied upon for treatment for specific medical conditions.

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ACCUENTING MEMBER OF  PARTNERS
HOSPITALS

Nutrition is not Unique; Eating Strategies Might Be

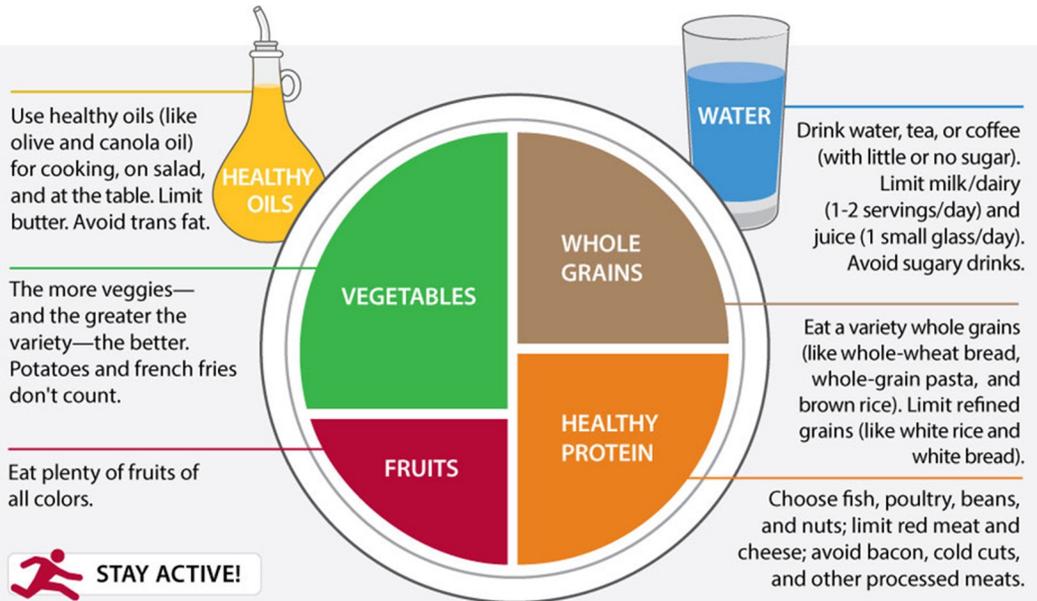


eatsmartidahointhekitchen.com

“Water is the BEST drink.”
 “Water is an anytime drink.”



HEALTHY EATING PLATE



 **STAY ACTIVE!**

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 The Nutrition Source
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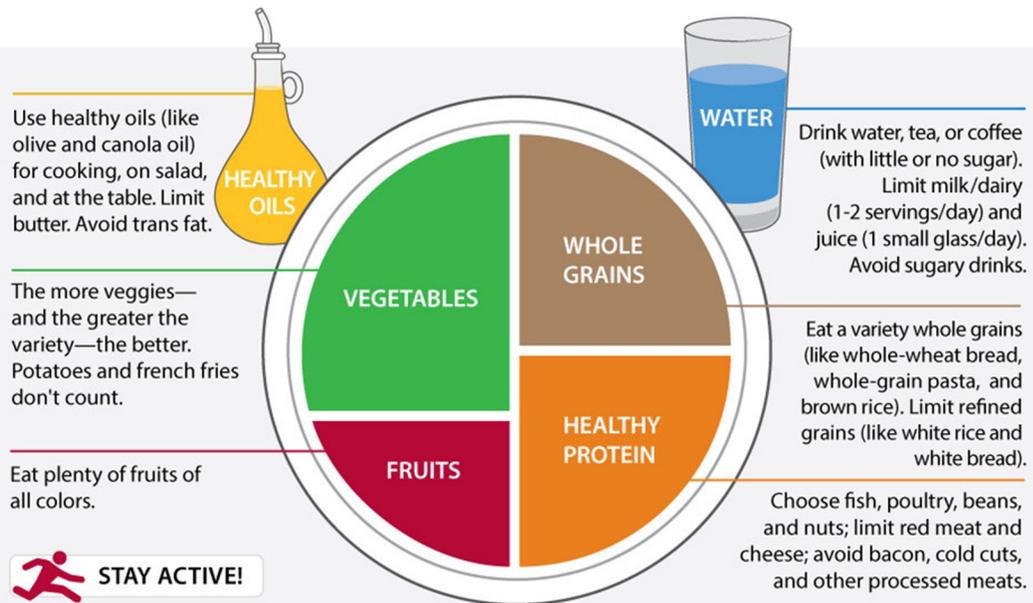
85%
of Americans do not eat
enough fruits and vegetables.



futureceuticals.com (based on CDC and USDA data)



HEALTHY EATING PLATE



 **STAY ACTIVE!**

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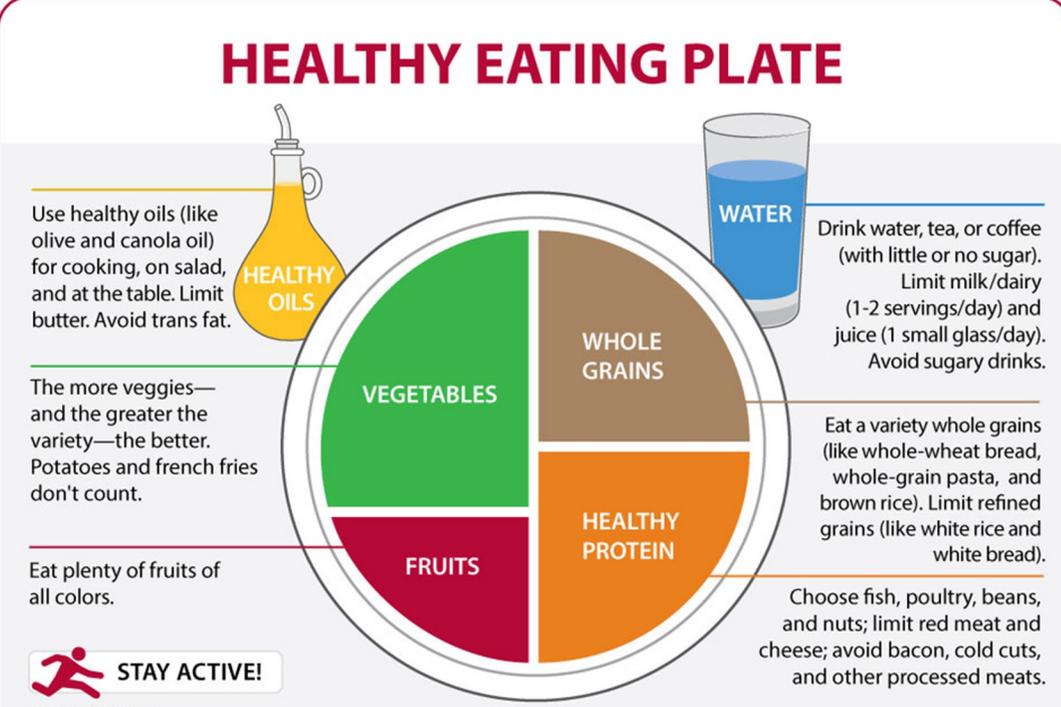
Healthy Protein Options

		
Black beans 15.2 grams protein 1 cup	Fatty fish with skin 60 grams protein 3.5 oz	
		
Greek yogurt 17 grams protein 6-oz container	Whole eggs 6.2 grams protein 1 egg	Peanuts 7 grams protein 1 oz
		
Hemp seeds 9.5 grams protein 1 oz	Pumpkin seeds 8.5 grams protein 1 oz	Chicken and turkey 25 grams protein 3 oz
		
Cottage cheese 23.5 grams protein 1 cup	Protein powder Approx. 24 grams protein 1 scoop	Edamame 18.4 grams protein 1 cup

mindbodygreen.com



HEALTHY EATING PLATE



HEALTHY OILS
Use healthy oils (like olive and canola oil) for cooking, on salad, and at the table. Limit butter. Avoid trans fat.

VEGETABLES
The more veggies—and the greater the variety—the better. Potatoes and french fries don't count.

FRUITS
Eat plenty of fruits of all colors.

WHOLE GRAINS
Eat a variety whole grains (like whole-wheat bread, whole-grain pasta, and brown rice). Limit refined grains (like white rice and white bread).

HEALTHY PROTEIN
Choose fish, poultry, beans, and nuts; limit red meat and cheese; avoid bacon, cold cuts, and other processed meats.

WATER
Drink water, tea, or coffee (with little or no sugar). Limit milk/dairy (1-2 servings/day) and juice (1 small glass/day). Avoid sugary drinks.

STAY ACTIVE!
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Harvard Medical School
Harvard Health Publishing
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Nutrition is not Unique; Eating Strategies Might Be



ADDED SUGAR

Sugar that is added to foods during processing, cooking, or before eating.



NATURAL SUGAR

Sugar that is naturally found in whole, unprocessed foods such as fruits.

healthline.com

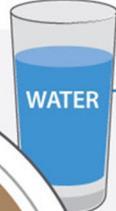


HEALTHY EATING PLATE



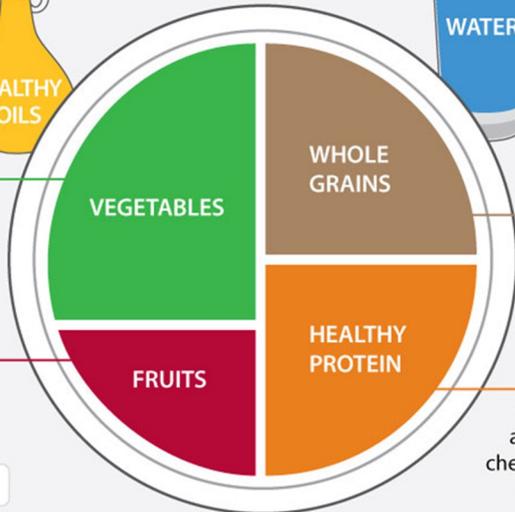
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The more veggies—and the greater the variety—the better. Potatoes and french fries don't count.

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Choose fish, poultry, beans, and nuts; limit red meat and cheese; avoid bacon, cold cuts, and other processed meats.



STAY ACTIVE!

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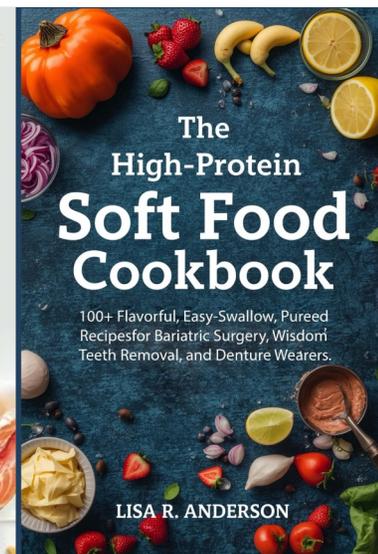
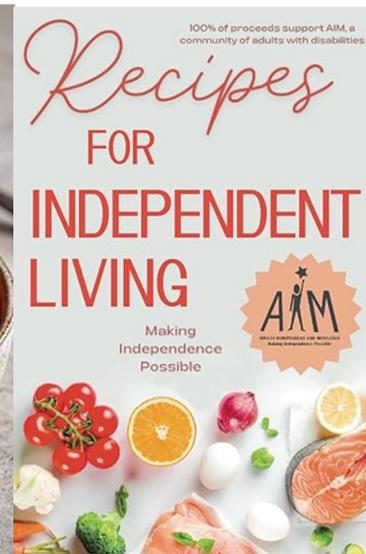
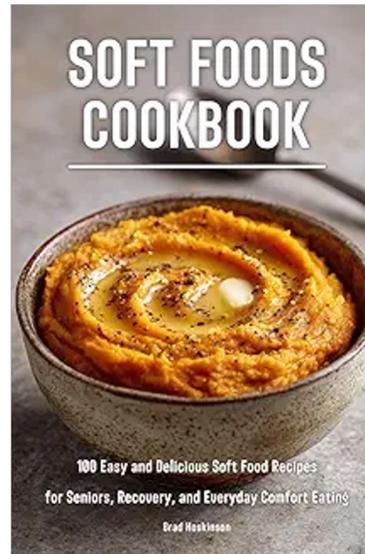
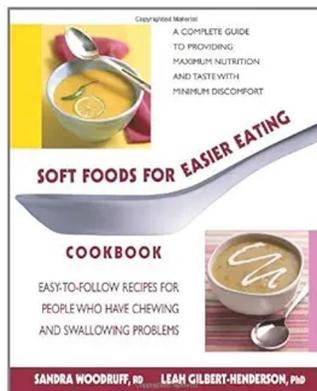
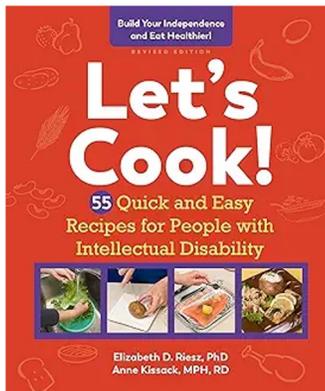
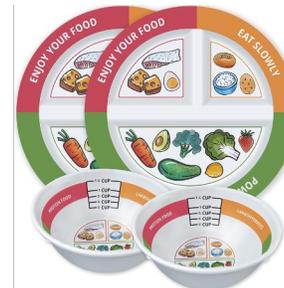
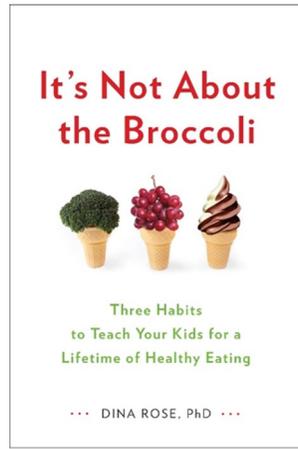
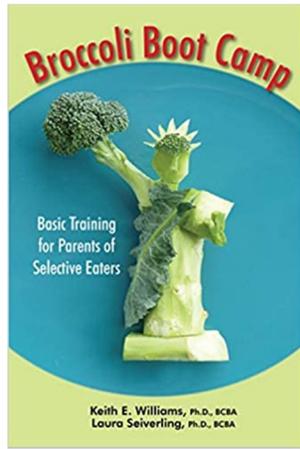


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Nutrition is not Unique; Eating Strategies Might Be



Healthy Drinks: Tips for Success

- Water is the best drink. Water is an anytime drink.
- It is easier to drink more water if:
 - it is cold (or ice cold)
 - a straw is available
 - the cup the largest size that is easy to hold independently
 - a flavor is available (look for flavor options with low/no calories)
- Milk (or a calcium-fortified plant-based milk) is also healthy because it has more nutrition than the calories (energy).



Healthy Eating: More Tips for Success

- Use **positive language** when talking about food and bodies.
- **Portion snacks in advance.** Color-coded containers can be helpful, or choose a snack container (with a top) that can be the “right size” for most snack choices.
- Start small; be specific! **Develop a healthy eating goal** and include alternatives to food-based (or drink-based) rewards in education, transition, or individualized support plans (ISP).
- **Develop behavior plans that do not use food as a reward.**
Document and discuss specific alternatives to food-based rewards.



Nutrition and Aging

Changes in **food routines** might be the first place that familiar caregivers notice cognitive change, especially if there are no other reasonable explanations for these changes.



www.istockphoto.com



Nutrition and Aging

- unplanned weight loss (Fleming et al. 2024) and/or observed muscle loss (Minaglia et al. 2019)
- bone density loss (Bettis et al. 2021)
- protein/calorie malnutrition (Loda et al. 2024)
- dehydration (Beck et al. 2021, Liska et al. 2019)



www.specialstrong.com



Nutrition and Aging

“Malnutrition is associated with adverse health outcomes, including faster cognitive and functional decline.” (Loda et al. 2024)

Malnutrition is not defined by weight or weight changes in alone.

- Micronutrient malnutrition can lead to “adverse health outcomes” without changes in overall body appearance.
- Macronutrient deficiencies can also lead to “adverse health outcomes.”



www.wayfair.com

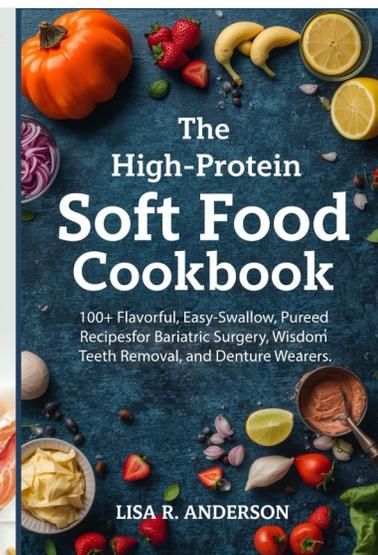
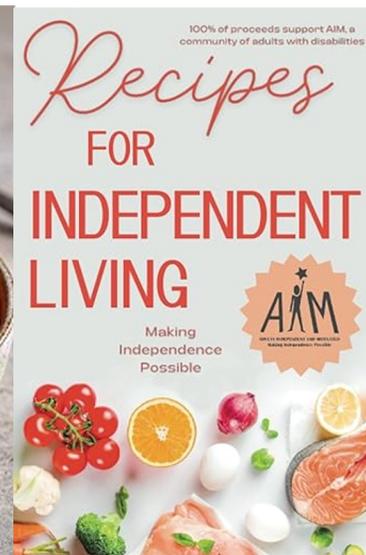
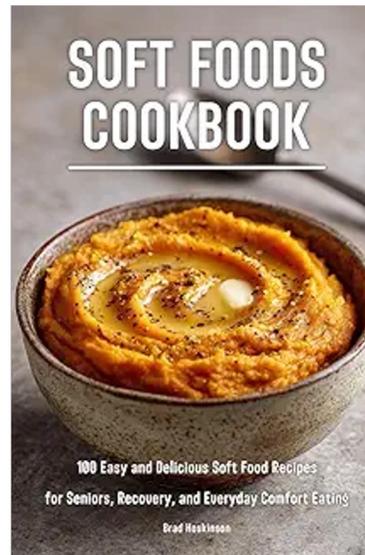
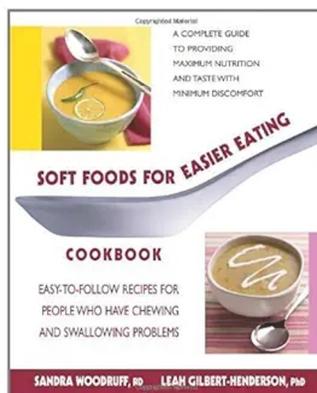
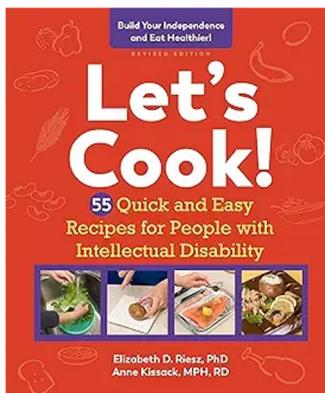
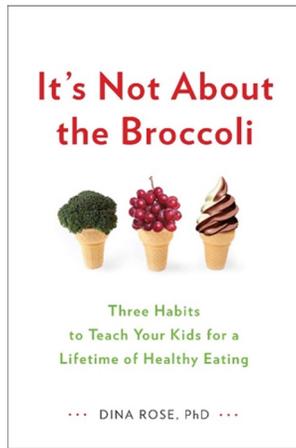
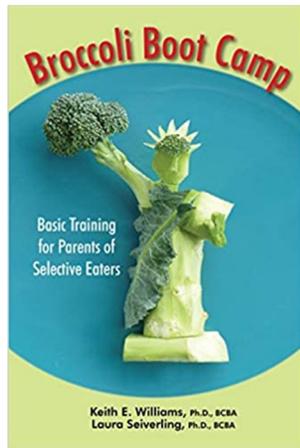


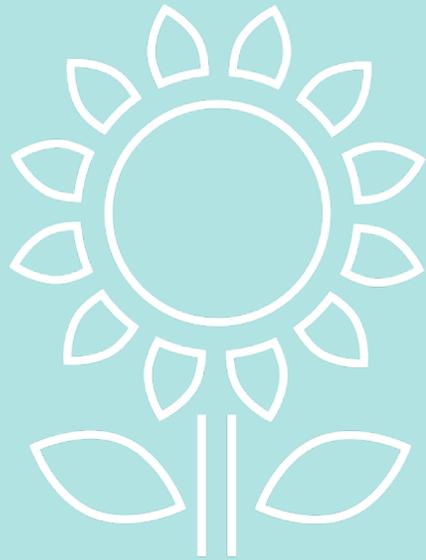
Safe and Successful Eating: Tips for Success

- Put away personal electronics before eating starts. Wash hands.
- Sit at the table every time you eat.
- Choose supportive seating (with back and foot supports).
- If AAC devices are helpful for communication, consider using them at mealtimes.
- Consider modifying the textures of foods to align with the person's texture preferences and current swallowing abilities.



Nutrition is not Unique; Eating Strategies Might Be





Q&A Time



Thank you for joining us!

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MGH Down Syndrome Program

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