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Reducing Barriers to Healthy Weight: Planned and Responsive Adaptations to a Lifestyle Intervention to Serve People with Impaired Mobility

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Abstract

Background—People with impaired mobility (IM) disabilities have a higher prevalence of obesity and obesity-related chronic conditions; however, lifestyle interventions that address the unique needs of people with IM are lacking.

Objective—This paper describes an adapted evidence-based lifestyle intervention developed through community-based participatory research (CBPR).

Methods—Individuals with IM, health professionals, disability group representatives, and researchers formed an advisory board to guide the process of thoroughly adapting the Diabetes Prevention Program Group Lifestyle Balance (DPP GLB) intervention after a successful pilot in people with IM. The process involved two phases: 1) planned adaptations to DPP GLB content and delivery, and 2) responsive adaptations to address issues that emerged during intervention delivery.

Results—Planned adaptations included combining in-person sessions with conference calls, providing arm-based activity trackers, and adding content on adaptive cooking, adaptive physical activity, injury prevention, unique health considerations, self-advocacy, and caregiver support. During the intervention, participants encountered numerous barriers, including health and mental health issues, transportation, caregivers, employment, adjusting to disability, and functional limitations. We addressed barriers with responsive adaptations, such as supporting electronic self-monitoring, offering make up sessions, and adding content and activities on goal setting, problem solving, planning, peer support, reflection, and motivation.

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Conclusions—Given the lack of evidence on lifestyle change in people with disabilities, it is critical to involve the community in intervention planning and respond to real-time barriers as participants engage in change. A randomized controlled trial (RCT) is underway to examine the usability, feasibility, and preliminary effectiveness of the adapted intervention.

Keywords

Impaired mobility; healthy lifestyle; obesity; disability

Introduction

People with impaired mobility (IM) remain underserved by public health efforts to address overweight and obesity,¹ and effective lifestyle interventions are lacking.¹⁻⁶ Yet people with disabilities have a higher prevalence of obesity and obesity-related chronic conditions^{7,8} including a four times higher prevalence of diabetes.⁷ People with IM are less physically active⁹ and less likely to receive exercise counseling than people without disability.¹⁰ Moreover, the adverse effects of obesity may be greater for people with IM, as excess weight and additional health problems may further restrict functioning and independence.¹

While many healthy lifestyle interventions have included people with disabling conditions,^{2,11,12} fewer have promoted weight loss through both physical activity and diet change specifically among people with IM.^{13,14} In particular, people with severely impairing neurological conditions such as spinal cord injury, stroke, and multiple sclerosis have been underrepresented in weight loss research.^{11,15} There is also a growing recognition that unnecessary and costly duplication of programs could be minimized if evidence-based programs are adapted rather than developed de novo.¹⁶⁻¹⁹ Building on the findings of a pilot study,²⁰ our research team sought to further adapt an existing healthy lifestyle intervention to address the unique dietary, functional, and environmental needs of people with IM, including those with severe impairment due to neurological conditions.

The purpose of this paper is to describe the modifications identified through a community-based participatory research (CBPR) approach to adapting the successful Diabetes Prevention Program Group Lifestyle Balance™ (DPP GLB) program into the Group Lifestyle Balance program Aadapted for individuals with Impaired Mobility (GLB AIM) program. The goal of both the original and adapted programs is to promote weight loss through an increase in weekly time spent in physical activity and a reduction in daily calorie and fat intake. While the DPP GLB is not explicit in its theoretical basis, the program's emphasis on self-monitoring, behavioral skills, and environment are consistent with the Social Cognitive Theory (SCT).²¹ The DPP GLB also incorporates elements of Relapse Prevention²² and Cognitive Behavioral Therapy (CBT).²³ The GLB AIM preserves and extends these theoretical constructs in the context of physical disability. A randomized controlled trial (RCT) of the GLB AIM to test feasibility and preliminary effectiveness of the adapted intervention is currently underway.

Methods

Original DPP GLB program

The DPP GLB is a direct adaptation of the individualized Diabetes Prevention Program (DPP) for delivery by trained coaches in the community. In a three-armed, multi-center RCT the DPP produced significantly greater weight loss, increased PA, and lower incidence of type 2 diabetes mellitus than the two arms that received standard lifestyle recommendations along with either the medication metformin or a placebo.^{24–27} The group-based DPP GLB^{28,29} has been effective in lowering weight and increasing PA in multiple community settings.^{30–33} It consists of 12 weekly core in-person sessions, followed by 4 biweekly core transition and 6 monthly support in-person sessions. The program promotes weight loss by limiting calories and being more physically active. Weekly sessions teach behavioral skills and provide accountability for achieving daily calorie and fat gram goals and 150 minutes of moderate PA each week. Skills include goal setting, self-monitoring, feedback, identifying risky situations, relapse prevention skills, and altering environmental cues. To ensure essential intervention components were preserved in the GLB AIM, we formally partnered with the University of Pittsburgh Diabetes Prevention Support Center (DPSC), the organization that ensures fidelity of DPP GLB implementation. The DPP GLB curriculum and materials are available free of charge on the University of Pittsburgh DPSC website (<http://www.diabetesprevention.pitt.edu/index.php/for-the-public/for-health-providers/group-lifestyle-balance-curriculum/download-the-dpp-group-lifestyle-balance-curriculum/>).

Adaptation Process

Our aim was to adapt the DPP GLB to be appropriate for individuals with IM, including those with severely impairing neurological conditions. We defined IM as a permanent impairment that limits mobility based on 7 items from the Physical Function section of the National Health and Nutrition Examination Survey.³⁴ Using the CBPR approach of engaging an advisory board, we undertook two adaptation phases: planned and responsive. The 13-member national advisory board consisted of health professionals including physical medicine and rehabilitation physicians, an occupational therapist, and a professor of clinical nutrition; disability researchers specializing in weight loss, built environment, adapted PA, and human and organizational development; and individuals representing community-based disability organizations, including the directors of a local independent living center and an adaptive gym. Five advisory board members had mobility impairments resulting from orthopedic and neurological conditions that required wheelchair use. Figure 1 illustrates our adaptation process. The advisory board directed and participated in making planned content changes and later provided input about adaptations responsive to emergent issues identified during delivery of the intervention.

Planned adaptations (pre-intervention)—In December 2014, the advisory board convened in person to discuss global issues related to disability and healthy lifestyle and specific modifications to the GLB program, with a focus on the initial 12 core sessions. After the meeting, members convened remote working groups to draft and/or review adapted materials on specific topics. Faculty members of the DPSC participated in advisory board discussions and reviewed and provided input on final versions of all sessions.

After finalizing core sessions, study investigators began an RCT of the one-year program with an intervention group. Participants included individuals with spinal cord injury, multiple sclerosis, stroke, cancer, osteoarthritis, orthopedic problems, and other etiologies that resulted in IM. Participants were recruited in the Dallas/Fort Worth metroplex area of Texas from medical systems, such as University of Texas Southwestern Medical Center (UT Southwestern) and Baylor Institute for Rehabilitation (BIR); disability service organizations, such as REACH Independent Living Center and the Neuro Fitness Foundation (an accessible gym); and durable medical equipment providers, such as Advanced Mobility Systems of Texas and Lift-Aids. Study flyers were distributed to all of these locations and print advertisements were placed in Ad Pages and Greensheet circulars. Physicians and clinicians at BIR and UT Southwestern discussed the study with patients who met the eligibility criteria.

Responsive adaptations (concurrent with intervention)—During the course of intervention delivery, the study team made responsive, unplanned adaptations to address emergent issues identified through process measures, staff observations, and participant anecdotes. During this phase, the study team examined participants' engagement (attendance and self-monitoring), formally reported health events, and anecdotally reported barriers to program adherence. The principal investigator, co-investigators, and interventionists met monthly to discuss barriers and devise responsive adaptations to address them. The advisory board reconvened by phone in June 2016 to provide guidance on the issues faced during intervention months 4–9 and recommended corresponding adaptations to the remaining sessions.

Results

Planned adaptations (pre-intervention)

The advisory board recommended changes to program delivery and content. The GLB AIM topics for each session and adaptations are in Table 1.

Program delivery—The original DPP GLB curriculum is delivered in-person for all 22 sessions. One advisory board recommendation was to alternate phone-based and in-person sessions to alleviate persistent transportation barriers faced by people with IM. Results published from a small pilot study we previously conducted²⁰ supported the acceptability of a teleconference format for individuals with IM. While the board supported a mixed delivery approach for the weekly core sessions, they believed in-person interaction over subsequent sessions (months 4–12) was important to enhance peer support and provide an opportunity to weigh, given limited availability of wheelchair-accessible scales in the community. They agreed that a monthly in-person meeting would be feasible for participants.

The board also recommended incorporating technology by (1) providing arm-based activity trackers rather than pedometers, because pedometers do not capture movement in a wheelchair; (2) using mobile applications to self-monitor diet and PA; and (3) creating a study Facebook page to facilitate communication among participants. Finally, the board recommended inviting caregivers to attend program sessions, given their high involvement in

daily activities (e.g., transportation, food preparation) for participants with severe impairment.

Content—The board recommended thoroughly revising the core program materials to make language and examples “disability friendly” and to incorporate substantial new content. Changes were made to all sessions, but the most substantial content changes focused on (1) adding a session on adaptive cooking and (2) considerably revising the content on PA, to explicitly address accessibility issues. The board helped develop the adaptive cooking content, with topics including kitchen modifications, adaptive cooking tools, accessible low-fat cooking methods, kitchen safety, saving time and money, accessible grocery, shopping, and resources. The board also assisted with substantially revising the PA sessions (sessions 4, 11) to address adapted PA, including home-based activities (e.g., neighborhood wheeling, arm ergometers, exercise videos, resistance bands and other home equipment) and community-based activities (e.g., gyms, water exercise, kayaking, adapted sports). An accessibility checklist and guidelines for gradual progression to meet the 150-minute weekly goal were added, consistent with the most recent national PA recommendations (17). Supplemental materials were developed to further address planning and safety, diagnosis-specific issues, adaptive equipment, local places to be active, and resources.

Other key content additions included guidance on unique health considerations, such as preventing pressure ulcers and urinary tract infections, preventing overuse injury, and expecting changes to bowel and bladder programs, all in the context of lifestyle change. Revised materials also included guidance on staying healthy in the hospital and getting back on track after a health event. A handout for caregivers discussed how to help with healthy lifestyle (e.g., be a cheerleader, not a coach) and how to take care of their own needs (e.g., set realistic goals, seek support, use relaxation techniques). Advisory board members authored these new materials, which were incorporated into existing sessions.

Responsive adaptations (concurrent with intervention)

During monthly team meetings the study team reviewed empiric and anecdotal evidence of issues affecting engagement as measured by participants’ weekly meeting attendance and dietary self-monitoring (rates will be reported with the results of the RCT). A number of participants anecdotally reported facing disability-related barriers to engaging in program activities and intervention recommended behaviors. Barriers included health events, such as pressure ulcers, surgeries, and procedures; and mental health issues such as depression, anxiety, and panic attacks. Other noted barriers included transportation, caregivers, employment and financial issues, and adjustment to disability. The team discussed methods to reduce barriers and improve program engagement. Figure 2 summarizes how responsive adaptations were intended to moderate the relationship between barriers participants experienced and negative consequences.

Content—The study team developed responsive content adaptations to enhance participant motivation and self-efficacy. First the team added a group-based problem solving and planning activity to address emergent barriers. This activity, which coincided with session 18

(originally session 17), guided participants in using the DPP GLB's problem solving and planning approach to address disability-specific barriers and create new short-term goals. Lifestyle coaches followed up on these goals, providing additional accountability.

Second, the advisory board recommended modifying the session on reducing sedentary behavior (GLB AIM session 22; DPP-GLB session 19) to focus on enhancing motivation and self-efficacy for healthy lifestyle. Using the advisory board's input, the study team rewrote the session to focus on the mastery experience. Specifically, the content guided participants in identifying past successes, skills gained, unique facilitators, and personal strengths. To accomplish this, the new session utilized personal reflection, peer support, and planning exercises.

Coaches reiterated key GLB AIM skills over the final sessions as participants reported problems. These included self-advocacy (e.g., speaking up for one's needs in the community and with caregivers, finding compromise); problem-solving around common barriers (e.g. transportation, limited time with caregivers); and relapse prevention techniques for dealing with health events or other setbacks (e.g. managing stress, staying healthy in the hospital, protecting time set aside for healthy lifestyle while recuperating, restarting PA progression after physical recovery). To encourage engagement and enhance self-efficacy for stress management and PA at home, the team added two activities to in-person sessions: wheelchair yoga and wheelchair dance.

Program delivery—The planned delivery options for participants unable to attend one or more sessions included (a) inviting individuals to call in to the session, (b) making available the original DPP GLB DVDs, as well as (c) providing audio recordings of each session. To further address transportation barriers, declining attendance at the in-person sessions, and low uptake of the options offered above, the team began offering make-up conference calls for in-person sessions, beginning with session 18 in the intervention group.

To address low self-monitoring adherence, the team responded by encouraging and facilitating use of a mobile application to track food and PA daily, beginning with session 17 in the intervention group. While the original DPP GLB offers participants the option to track by paper or using a mobile application, the original program does not specifically encourage or support applications. Participant feedback and staff observation indicated that cell phones were physically and logistically easier for participants to manage than calorie books and paper journals. For example, some participants' impairments involved arm, hand, and finger function. Mobile applications also offered stronger accountability, as lifestyle coaches were able to view participant diaries in real-time.

A wait-list control group received the full GLB AIM intervention, including all planned and responsive adaptations to program delivery and content (see Figure 1).

Integrity and theory of the GLB AIM program

In creating the GLB AIM, the advisory board and DPSC collaboration helped ensure essential components of the DPP GLB were retained throughout the adaptation processes. The DPP GLB target behaviors of self-monitoring and meeting daily calorie and fat gram

goals, and self-monitoring and achieving a minimum of 150 minutes per week of moderate-vigorous PA were preserved. The target behavior of regular self-weighing was encouraged for those who could safely stand or who had access to wheelchair accessible scales. While DPP GLB content was modified and new content was added, no content was eliminated. DPP GLB pedagogy was retained with the exception of weekly weigh-ins during the core sessions, given the reduced frequency of in-person sessions due to transportation barriers. Aside from the addition of one session on adaptive cooking, the recommended DPP GLB sequence, schedule, and dosing was retained. Finally, the GLB AIM preserved and extended the theoretical underpinnings of the original DPP GLB in the context of disability. Table 1 provides an overview of the theories and theoretical constructs that apply to each of the GLB AIM sessions.

Discussion

This paper describes the process used to identify needed modifications to adapt an evidence-based lifestyle program to suit the needs of people with IM. Strengths of our process included incorporating a CBPR approach to assure targeted and appropriate planned adaptations, and addressing the experiences of people with IM as they engaged with the intervention through responsive adaptations. Although anticipated, barriers including health events, transportation, caregiver and employment issues, adjusting to disability, and functional limitations emerged as persistent barriers requiring responsive adaptations. Future healthy lifestyle intervention efforts for people with physical disabilities must thoroughly address these barriers. Finally, articulating the theoretical basis for the GLB AIM clarifies proposed mechanisms of behavior change.

Our method of adapting the DPP GLB (planned and responsive adaptations) followed the general guidelines of the Department of Health and Human Services recommendations for adapting evidence based programs (available at <https://www.acf.hhs.gov/sites/default/files/fysb/prep-making-adaptations-ts.pdf>) and some aspects of the Guidelines, Recommendations, Adaptations Including Disability (GRAIDs).¹⁷ Although the staff did not conduct focus groups, a pilot study of a modified DPP GLB established preliminary feasibility and usability among people with IM.³⁵ The GLB AIM also incorporated aspects of individual behavioral weight loss treatment;³⁶ however, the group-based format of the GLB AIM may offer a more cost-effective approach with potentially greater reach than individual lifestyle change programs.^{28,29} Furthermore, the group format provides an avenue for social support from other people with disabilities, which may help buffer stress associated with lifestyle change³⁷ as well as depression,³⁸ a commonly reported barrier in our study.

A limitation to our approach was the lack of a formal mechanism for incorporating ongoing participant feedback to inform responsive adaptations. Although we engaged the advisory board in making decisions during the program and participants provided a summative program evaluation after program completion, additional insight into participant barriers and potential solutions could be achieved by including a participant representative in team meetings or regularly surveying participants. Use of the rigorous Participatory Action

Research framework would help assure community engagement and promote sustainability by involving people with disabilities in making all final study decisions.^{39–41}

There is an urgent need to test and implement healthy lifestyle interventions for people with IM, who face a higher prevalence of obesity and related chronic conditions and greater barriers to healthy lifestyle. A strength of the GLB AIM is its potential to develop an evidence base for intervention in both community and clinical settings, as the original DPP GLB has demonstrated effectiveness in these settings. Moreover, the original DPP GLB is publicly accessible through the Creative Commons Agreement and is supported by the DPSC. Thus the GLB AIM may be a viable intervention strategy for health care systems and communities to address the obesity epidemic in people with IM. Forthcoming feasibility and effectiveness data from the RCT will inform future interventions.

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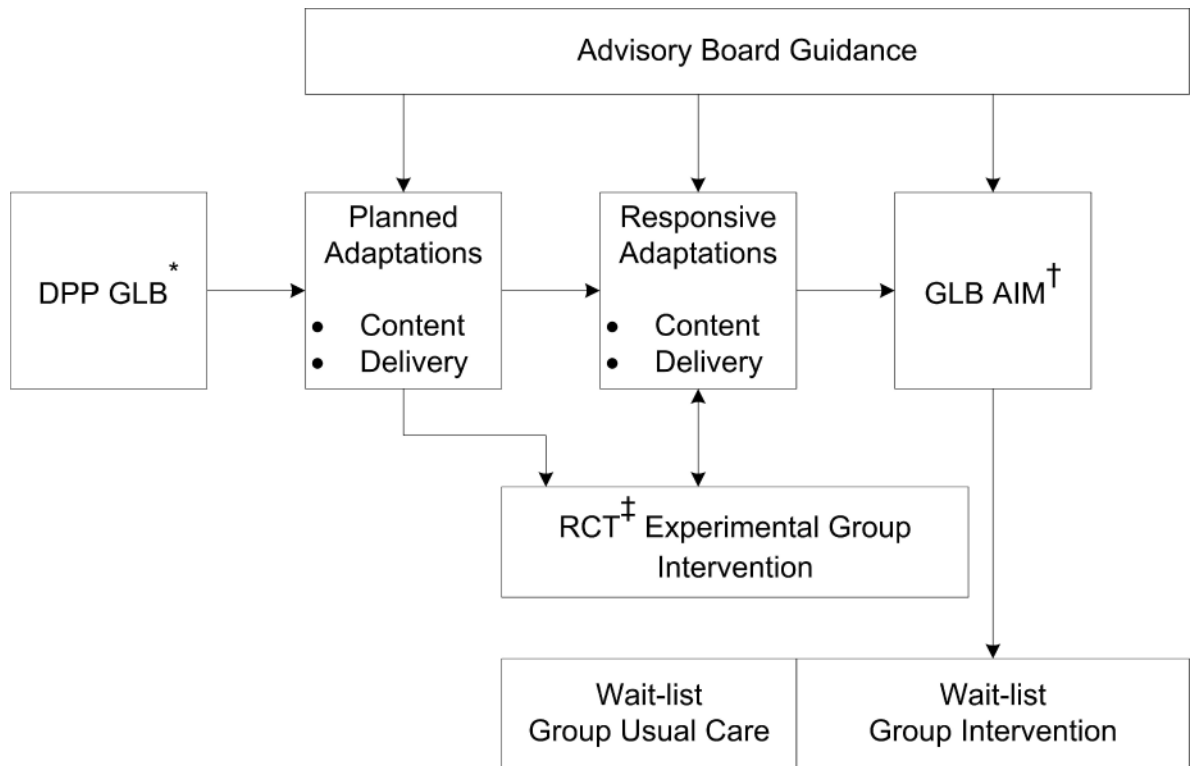


Figure 1.
 Conceptual model for process of adapting the DPP GLB* to the GLB AIM†
 * Diabetes Prevention Program Group Lifestyle Balance™
 † Group Lifestyle Balance Adapted for individuals with Impaired Mobility
 ‡ Randomized Controlled Trial

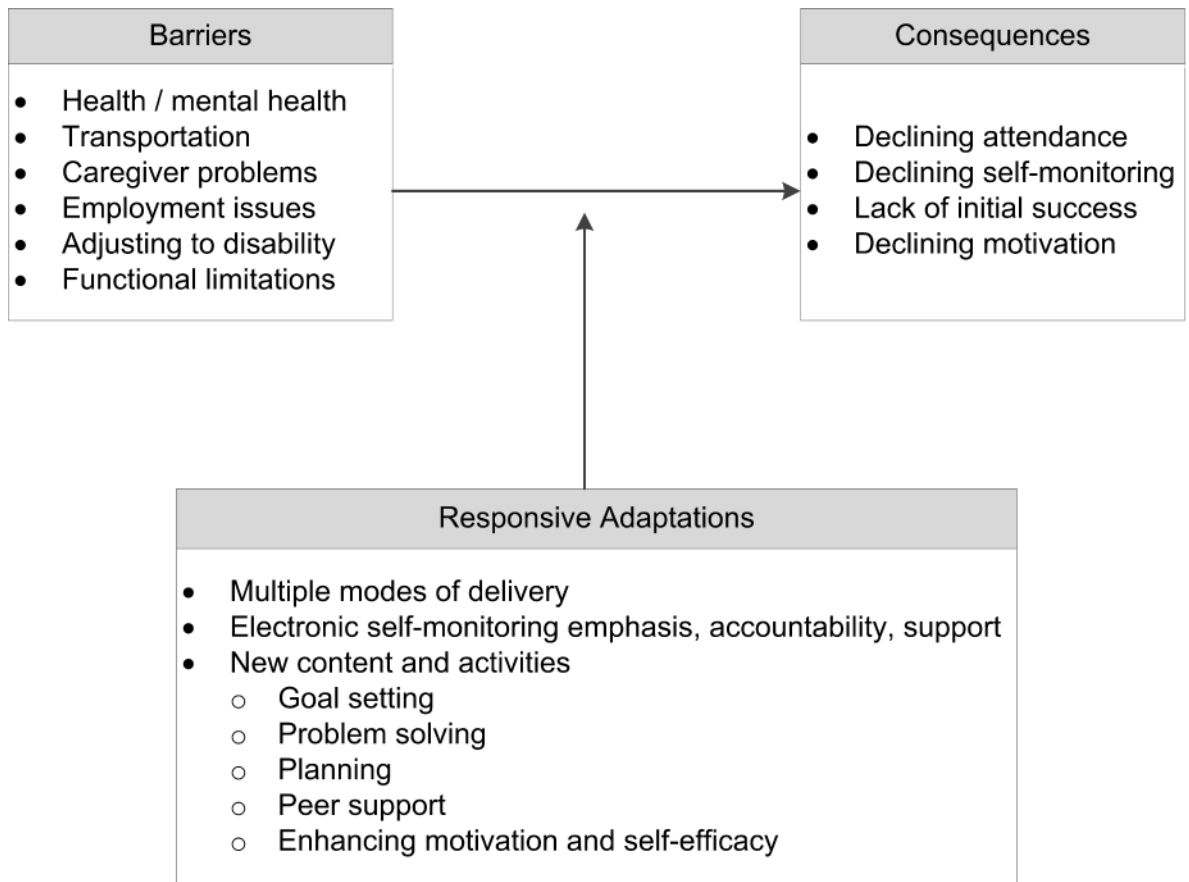


Figure 2.
Summary of barriers, consequences, and responsive adaptations

Table 1 GLB AIM* session schedule, topics, theories and constructs, original DPP GLB[†] summaries, and revision summaries

Month + meeting schedule	Session #	Topic	Theory & Constructs	DPP GLB Content	GLB AIM Revision (content or wording)
1 weekly (core)	1 (in-person)	Welcome to the GLB Program	SCT[‡] facilitation, self-regulation (goal setting & self-monitoring)	Build program commitment & highlight program goals of (a) targeting 5%–7% weight loss and (b) doing 150 minutes of weekly physical activity + discuss lifestyle coach role to support participants efforts & introduce self-monitoring of food intake.	<p>Planned adaptations</p> <p>New content</p> <ul style="list-style-type: none"> Disability and weight: Healthy People 2020 goals around health promotion and prevention for people with disabilities GLB AIM pilot study and findings Concentrating on health: Healthy lifestyle changes Gradual weight loss Reporting health events to staff Following doctor's orders <p>Revised content</p> <ul style="list-style-type: none"> Wording and examples appropriate for people with disabilities
	2	Be a Fat and Calorie Detective	SCT self-regulation (self-monitoring & goal setting)	Focus on finding the main sources of dietary fat by monitoring fat grams using the "DPP Fat Counter" & by reading food labels. Practice measuring & weighing food. Teach 3 ways to eat less fat: eat high-fat foods less often, eat smaller portions, and substitute lower fat foods and cooking methods. Assign a fat gram goal based on starting weight.	<p>Responsive adaptations</p> <p>Revised Content/Delivery</p> <ul style="list-style-type: none"> Strongly encouraged and facilitated app-based food tracking by providing written instructions for downloading, using, and sharing food entries with the team
	3	Healthy Eating	SCT self-monitoring	Discuss eating patterns and introduce the USDA's [§] "My Plate" as a model for healthy eating. Emphasize low-fat, low-calorie foods and serving size and how to choose healthier fats.	<p>Planned adaptations</p> <p>New content</p> <ul style="list-style-type: none"> Importance of protein (skin and muscle health) Importance of fiber (regulating and maintaining healthy digestion) <p>Revised content</p> <ul style="list-style-type: none"> Condensed fats information Moved to supplemental handouts Wording and examples appropriate for people with disabilities

Month + meeting schedule	Session #	Topic	Theory & Constructs	DPP GLB Content	GLB AIM Revision (content or wording)
	4	Move Those Muscles	<p>SCT self-monitoring goal setting</p>	<p>Introduce physical activity and benefits of active lifestyle. Discuss building to 150 minutes of activity over the next 4 weeks. Discuss safety issues. Begin self-monitoring of physical activity plus food intake. Review personal activity history and likes and dislikes about physical activity.</p>	<p>Planned adaptations New content</p> <ul style="list-style-type: none"> • Appropriate types of aerobic activities and adapted exercise • Safety equipment • Tips from people with mobility impairments who have been successful with physical activity programs • Accessibility checklist of indoor and outdoor exercise environments • Potential body changes with increased exercise • Awareness of preventing disability-related health issues (overuse injury, skin breakdown, pressure ulcers; autonomic dysreflexia) • Importance of gradual progression of exercise in working toward 150 minutes weekly goal <p>Revised content</p> <ul style="list-style-type: none"> • Session focus from walking to other accessible activities • Stretching sections • Changed wording around reducing “sitting time” to reducing sedentary behavior or inactivity • Moved stretching content to handouts • Wording and examples appropriate for people with disabilities
2 weekly (core)	5	Tip the Calorie Balance	<p>SCT self-monitoring self-efficacy</p>	<p>Teach the principle of energy balance and what it takes to lose 1–2 lbs per week. For people who have made little weight loss progress, may provide a structured meal plan at reduced calorie levels.</p>	<p>Planned adaptations New content</p> <ul style="list-style-type: none"> • Focusing on health while balancing calories • Preventing urinary tract infections and kidney stones (supplemental handouts) <p>Revised content</p>

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				NEW session	<ul style="list-style-type: none"> Wording and examples appropriate for people with disabilities
	6 (in-person)	Get Comfortable in the Kitchen	SCT observational learning facilitation self-efficacy		<p>Planned adaptations</p> <p>New content</p> <ul style="list-style-type: none"> Benefits of cooking at home Accessible methods for low-fat cooking Recipes and cooking techniques Kitchen modifications Accessible tools for food preparation Where to purchase accessible tools Accessible shopping Affordable options for buying healthy groceries and prepared meals Local farmer's markets and seasonal produce guide Information about grocery delivery Kitchen safety Demonstration: adaptive kitchen tools and equipment, strategies for making recipes simple and healthy, and tasting of a healthy recipe
	7	Take Charge of What's Around You	SCT reciprocal determinism self-monitoring cues self-efficacy	Introduce the principle of stimulus control. Identify cues in the participant's home environment that lead to unhealthy food and activity choices and discuss ways to change them.	<p>Planned adaptations</p> <p>New content</p> <ul style="list-style-type: none"> Self-advocacy Americans with Disabilities Act <p>Revised content</p> <ul style="list-style-type: none"> Wording and examples appropriate for people with disabilities
	8	Problem Solving	SCT self-monitoring problem solving	Present the 5-step model of problem solving: describe the problem as links in a behavior chain, brainstorm possible solutions, pick one solution to try, make a positive action plan, evaluate the success of the solution.	<p>Planned adaptations</p> <p>Revised content</p> <ul style="list-style-type: none"> Wording and examples appropriate for people with disabilities

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3 weekly (core)	9	Four Keys to Healthy Eating Out	SCT self-monitoring self-efficacy	Apply the problem-solving model to eating and exercise problems. Introduce 4 skills for managing eating away from home: anticipating and planning ahead, positive assertion, stimulus control, and making healthy food choices.	No substantive changes to content
	10	Slippery Slope of Lifestyle Change	SCT self-monitoring facilitation Relapse Prevention goal setting	Stress that slips are normal and learning to recover quickly is the key to success. Teach participants to recognize personal triggers for slips, identify their reactions to slips, replacing negative thoughts with positive self-talk; and getting back on track.	Planned adaptations New content <ul style="list-style-type: none"> Staying on track with a healthy lifestyle during a health event Talking with their doctor about lifestyle goals Importance of nutrition during recovery Gradually resuming physical activity routine Revised content <ul style="list-style-type: none"> Wording and examples appropriate for people with disabilities
	11 (in-person)	Jump Start Your Activity Plan	SCT problem solving goal setting	Provide pedometer. Introduce the basic principles of aerobic fitness: frequency, intensity, time, type of activity (FITT). Teach participants about measuring exercise intensity with heart rate and perceived level. Discuss adding variety to the physical activity plan to prevent boredom.	Planned adaptations New content <ul style="list-style-type: none"> Provided Garmin vivofit instead of pedometer Information about the vivofit monitor Information about MS/ exacerbation and exercise (supplemental handout) Revised content <ul style="list-style-type: none"> Wording and examples appropriate for people with disabilities
	12	Make Social Cues Work for You	SCT self-monitoring cues social support	Present strategies for managing problem social cues, e.g., being pressured to overeat, and help participants use social cues to promote healthy behaviors, e.g., making regular dates with a walking partner or group. Review specific strategies for coping with social	Planned adaptations New content <ul style="list-style-type: none"> Information for caregivers about how to be supportive and the importance of self-care Revised content

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				events such as parties, vacations, and holidays.	<ul style="list-style-type: none"> Wording and examples appropriate for people with disabilities
	13	Ways to Stay Motivated	SCT self-monitoring rewards social support CBT coping	Enhance motivation to maintain behavior change by reviewing participants' personal reasons for joining GLB and by recognizing personal successes. Introduce other strategies for staying motivated including posting signs of progress, setting new goals, creating friendly competition, and seeking social support from staff and others.	<p>Planned adaptations</p> <p>New Content</p> <ul style="list-style-type: none"> Disability-related stressors Tips for managing stressors <p>Revised content</p> <ul style="list-style-type: none"> Wording and examples appropriate for people with disabilities
	14 (in-person)	Preparing for Long-Term Self-Management	SCT self-management, contract	Discuss transition to less frequent meetings, describe benefits of continued attendance, renew commitment to GLB program.	<p>Planned adaptations</p> <p>Revised content</p> <ul style="list-style-type: none"> Wording and examples appropriate for people with disabilities
4 biweekly (support)	15	More Volume, Fewer Calories	SCT self-efficacy facilitation	Learn 4 ways to reduce calories by adding volume to meals: reduce fat, add water, add fiber, add fruits/vegetables. Discuss recipes for adding volume & identify characteristics of healthy choice for breakfast cereal.	<p>Planned adaptations</p> <p>Revised content</p> <ul style="list-style-type: none"> Wording and examples appropriate for people with disabilities
	16 (in-person)	Balance Your Thoughts for Long-Term Self-Management	CBT increase awareness of self-talk change response SCT self-management self-efficacy	Reflect on weight management behaviors for long-term and impacts of weight loss to life. Rank personal reasons for persisting in weight management efforts. Identify negative-thoughts and practice countering with more helpful and effective responses.	<p>Planned adaptations</p> <p>Revised content</p> <ul style="list-style-type: none"> Wording and examples appropriate for people with disabilities
5 monthly (support)	17 (in-person)	Strengthen Your Exercise Program	SCT observational learning self-efficacy facilitation	Discuss benefits of resistance training, recognize safety issues, including proper form and technique.	<p>Planned adaptations</p> <p>New content</p> <ul style="list-style-type: none"> Passive resistance and what equipment to use <p>Revised content</p> <ul style="list-style-type: none"> Wording and examples appropriate for people with disabilities
6 monthly (support)	18 (in-person)	Mindful Eating	SCT facilitation self-efficacy	Analyze and describe current eating behaviors, define mindful eating and negative effects of mindless eating. Discuss benefits of eating slowly &	<p>Responsive adaptations</p> <p>New content</p>

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7 monthly (support)	19 (in-person)	Stress and Time Management	SCT self-efficacy self-regulation CBT increase awareness of thoughts change responses	Discuss how stress affects lifestyle habits, plus identify healthy and unhealthy coping strategies. Discuss ways to take charge of stress and how to reduce, prevent, or manage stress. Practice relaxation techniques and discuss tips for improving sleep.	<p>Responsive adaptations</p> <p>New content</p> <ul style="list-style-type: none"> Added supplemental stress management content by performing video-based activities of: belly breathing, seated yoga, and watching funny videos <p>Revised content</p> <ul style="list-style-type: none"> Wording and examples appropriate for people with disabilities
8 monthly (support)	20 (in-person)	Stretching: The Truth about Flexibility	SCT observational learning facilitation self-efficacy	Review 4 components of exercise program: endurance, aerobic, strength, flexibility. Discuss importance of flexibility and techniques for safe stretching including proper form and technique.	<p>Planned adaptations</p> <p>New content</p> <ul style="list-style-type: none"> Preventing overuse injuries for manual wheelchair users Stretching (active, passive, and active-assisted) along with demonstrations <p>Revised content</p> <ul style="list-style-type: none"> Wording and examples appropriate for people with disabilities
9 monthly (support)	21 (in-person)	Heart Health	SCT outcome expectations	Discuss heart disease prevalence, risk-factors (blood pressure and cholesterol), and the role diet and exercise play in reducing risk.	<p>Planned adaptations</p> <p>Revised content</p> <ul style="list-style-type: none"> Wording and examples appropriate for people with disabilities
10 monthly (support)	22 (in-person)	Power Up: Harnessing What You Have Learned	SCT Self-efficacy, peer modeling, social support	NEW session, replaced "Stand Up for Your Health"	<p>Responsive adaptations</p> <p>New content</p> <ul style="list-style-type: none"> Enhancing motivation and self-efficacy by focusing on the mastery experience

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11 monthly (support)	23 (in-person)	Looking Back and Looking Forward	SCT reciprocal determinism social support self-efficacy	Discuss shift in thinking patterns useful for weight loss. Describe behaviors of those who maintain weight loss. Spend time reflecting and writing their personal healthy life story. Discuss critical foundation behaviors for maintaining weight loss.	<ul style="list-style-type: none"> Activity in which participants identify skills, facilitators, and strengths gained in the program <p>Revised content</p> <ul style="list-style-type: none"> Handouts on reducing sedentary behavior and moving more Wording and examples appropriate for people with disabilities <p>Planned adaptations</p> <p>New content</p> <ul style="list-style-type: none"> Emphasis on healthy lifestyle changes rather than focusing on weight loss Positive action plan in the “to do” list for where, how, and how often they will weigh themselves <p>Revised content</p> <ul style="list-style-type: none"> Wording and examples appropriate for people with disabilities

* Group Lifestyle Balance Adapted for individuals with Impaired Mobility

† Diabetes Prevention Program Group Lifestyle Balance™

‡ Social Cognitive Theory

§ United States Department of Agriculture

|| Multiple sclerosis

¶ Cognitive Behavioral Therapy