

# Combined Diet and Physical Activity Promotion Programs to Prevent Type 2 Diabetes Among People at Increased Risk

## Studies Utilizing Physical Activity or Diet Counselors

Author, Study Year, PMID*	Physical Activity Counselor	Diet Counselor
Absetz 2007 17586741	Depending on each center's resources, the nurses facilitated groups either solo or together with another nurse or a physiotherapist. Facilitators received 2 days of training with a standardized training program, training manuals, and practical exercises. A project dietitian supported facilitators and gave dietary counseling during one group session.	Depending on each center's resources, the nurses facilitated groups either solo or together with another nurse or a physiotherapist. Facilitators received 2 days of training with a standardized training program, training manuals, and practical exercises. A project dietitian supported facilitators and gave dietary counseling during one group session.
Ackermann 2014 24740868	See Diet Counselor	Intervention group participants were offered the option to interact with a virtual lifestyle coach, who responded to participants and group discussions via email and through online forum postings
Admiraal 2013 23894322	Furthermore, we offered to supervise a 20-week physical activity program for all participants in the intervention group. This program, "exercise on prescription", has been described elsewhere. Trained coaches monitored the participation in the physical activity program.	The counselors were trained dietitians who were familiar with the Hindustani Surinamese culture and dietary habits. We offered the participants a family session with the dietitian to decrease the social pressure to eat unhealthily and to increase the social support for a healthful lifestyle within the family.
Bhopal 2014 24622752		The intervention was consultation with a dietitian; both participants and family volunteers were part of this intervention. Dietitians were trained in venepuncture, anthropometric and blood pressure measurement, delivery of information, behaviour change using the stages of change model, and promotion of physical activity. Each family was mostly seen by the same dietitian throughout the study. The dietitians advised participants and family volunteers on achieving weight loss through a calorie-deficit diet and physical activity of at least 30 min daily brisk walking. 3-day food diaries and a dietary patterns questionnaire were used to collect data to inform dietitians' advice. Participants were invited to attend annual group

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		<p>sessions, including a food shopping tour and brisk walking. Pedometers were given to the participants to provide step counts for motivation through self-monitoring and for the dietitians to assess progress. Bodyweight and waist circumference data, and the Chester step test, were used as motivational devices by dietitians.</p>
<p>Cole 2013 23589326</p>		<p>[Intervention] sessions were set up to accommodate 6-8 patients and were supported by the following staff: a nutrition technician serving as a screener; a dietitian or nutrition technician as the session recorder; a certified diabetes educator registered dietitian as the provider; and a behavioral specialist, registered nurse, or registered dietitian trained in group dynamics as the facilitator of the sessions.</p> <p>Standard of care control group attended at least one 45- to 60-minute individualized counseling session with a registered dietitian following the initial 3-hour prediabetes education class. During these individual appointments, the dietitian discussed the patient's clinical outcomes and progress made in achieving lifestyle modifications since attending the prediabetes class and provided additional education, including assistance to develop SMART goals, and scheduled the patient for a follow-up appointment if desired</p>
<p>De la Rosa 2008 No PMID</p>		<p>A 30 minute initial session was given to patients in the intervention group by a physician and a metabolic syndrome educator/registered dietitian.</p>
<p>Eriksson 1991 1778354</p>	<p>Eighteen participants from Group 1 (44 %) and 68 from Group 2 (38 %) followed the protocol as organised groups, with a 6-month period of supervised physical training followed by a 6-month period of dietary treatment, or vice versa. After 12 months all participants continued to follow the protocol, with both diet and training, either on their own or together with previous group partners (one group under- went supervised training for a total of 18 months), and some groups continued training at local sports clubs.</p>	

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<p>Gagnon 2011 21489843</p>		<p>At each visit, the participant individually met with three members of our interdisciplinary team (15 minutes each):</p> <ul style="list-style-type: none"> <li>• the nurse, responsible of assessing the psychosocial context and providing support, reviewing progress, and identifying any barriers to change and strategies to overcome them;</li> <li>• the dietitian, who evaluated the participant’s food intake and helped to choose two or three nutritional goals (such as portion size, vegetable and wholegrain consumption, fat content, snacks and caloric beverages) to work on until the next appointment;</li> <li>• the endocrinologist, responsible for coaching the participant to progressively increase levels of physical activity (long-term objective of 60 min/day of moderate activity).</li> </ul>
<p>Gillison 2015 25592314</p>	<p>New materials were developed for lifestyle coaches resulting in the addition of 13 techniques and practical adjustments to reflect the needs of the patient population and local context. The intervention was facilitated by a pair of lifestyle coaches. Adherence to the study protocol and participant attendance was recorded by the lifestyle coaches.</p>	<p>NR</p>
<p>Iqbal Hydrie 2012 22888411</p>	<p>The subjects had sessions with a dietitian and a physical trainer at each visit and they were individually counselled to increase their level of physical activity.</p>	<p>The subjects had sessions with a dietitian and a physical trainer at each visit and they were individually counselled to increase their level of physical activity.</p>
<p>Islam 2014 24852392</p>	<p>The intervention consisted of six CHW-facilitated interactive group sessions of approximately 2 h in length and included the following topics: diabetes prevention, nutrition, physical activity, diabetes complications and other cardiovascular diseases, stress and family support, and access to health care. Findings from a mixed-methods formative study were used to inform inclusion of culturally relevant topics and strategies in the curriculum. Coalition members who were health professionals, including a nutritionist, a certified diabetes educator, a physical therapist, and a mental health professional, reviewed curriculum</p>	<p>See Physical Activity Counselor</p>

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	<p>components relevant to their areas of expertise. In addition, community partners included cultural and religious messaging to promote healthy living and overcome cultural barriers.</p>	
<p>Janus 2012 22929458</p>	<p>Certified and accredited Life! facilitators (trained health professionals such as nurses or diabetes educators) delivered the intervention. A physiotherapist or exercise physiologist and a dietitian co-facilitated sessions three and four, respectively.</p>	<p>Certified and accredited Life! facilitators (trained health professionals such as nurses or diabetes educators) delivered the intervention. A physiotherapist or exercise physiologist and a dietitian co-facilitated sessions three and four, respectively.</p>
<p>Jiang 2013 23275375</p>		<p>The curriculum was delivered in group settings within 16–24 weeks after baseline assessment and typically was taught by the program dietitian and/or health educator. It was supplemented by monthly individual lifestyle coaching sessions to customize goals and plan and to identify and solve barriers to participation. Participants were encouraged to use a Keeping Track booklet to monitor their fat and calorie intake and weekly physical activity. If used, booklets were reviewed by lifestyle coaches who gave feedback to the participants during the monthly lifestyle coaching sessions. Approximately one-half of the lifestyle coaches were health educators or dietitians. Others were nurses, nursing students, nurse or medical assistants, exercise specialist, or lay health workers from various professional backgrounds.</p>
<p>Katula 2011 23498294</p>		<p>Participants also received three personalized consultations with a registered dietitian (during months 1, 3, and 6).</p>
<p>Knowler 2002 11832527</p>	<p>Each of the 27 participating clinical centers has a Principal Investigator, a Program Coordinator and additional staff to carry out the protocol that may include recruitment coordinators, dietitians, behaviorists, exercise physiologists, physicians, nurses, data collectors and others.</p>	<p>Each of the 27 participating clinical centers has a Principal Investigator, a Program Coordinator and additional staff to carry out the protocol that may include recruitment coordinators, dietitians, behaviorists, exercise physiologists, physicians, nurses, data collectors and others.</p> <p>The intervention is conducted by case managers with training in nutrition, exercise, or behavior modification who meet with an</p>

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	<p>The intervention is conducted by case managers with training in nutrition, exercise, or behavior modification who meet with an individual participant for at least 16 sessions in the first 24 weeks and contact the participant at least monthly thereafter(with in-person contacts at least every 2 months throughout the remainder of the program).</p> <p>Two supervised group exercise sessions per week are provided to help participant achieve their exercise goal.</p>	<p>individual participant for at least 16 sessions in the first 24 weeks and contact the participant at least monthly thereafter(with in-person contacts at least every 2 months throughout the remainder of the program).</p>
<p>Knowler 2009 19878986</p>	<p>Each of the 27 participating clinical centers has a Principal Investigator, a Program Coordinator and additional staff to carry out the protocol that may include recruitment coordinators, dietitians, behaviorists, exercise physiologists, physicians, nurses, data collectors and others.</p> <p>The intervention is conducted by case managers with training in nutrition, exercise, or behavior modification who meet with an individual participant for at least 16 sessions in the first 24 weeks and contact the participant at least monthly thereafter(with in-person contacts at least every 2 months throughout the remainder of the program).</p> <p>Two supervised group exercise sessions per week are provided to help participant achieve their exercise goal.</p>	<p>Each of the 27 participating clinical centers has a Principal Investigator, a Program Coordinator and additional staff to carry out the protocol that may include recruitment coordinators, dietitians, behaviorists, exercise physiologists, physicians, nurses, data collectors and others.</p> <p>The intervention is conducted by case managers with training in nutrition, exercise, or behavior modification who meet with an individual participant for at least 16 sessions in the first 24 weeks and contact the participant at least monthly thereafter(with in-person contacts at least every 2 months throughout the remainder of the program).</p>
<p>Laatikainen 2007 17877832</p>	<p>The sessions were facilitated by specially trained study nurses, dietitians and physiotherapists.</p>	<p>The sessions were facilitated by specially trained study nurses, dietitians and physiotherapists.</p>
<p>Liao 2002 12196418</p>	<p>The treatment group received endurance exercise training and a dietary prescription. For the first 6 months, exercise sessions were directed by an exercise physiologist.</p>	<p>The treatment group received endurance exercise training and a dietary prescription. Based on 3-day food records, each participant’s baseline diet was analyzed; this information was used by a dietitian to instruct participants on their prescribed diet. At visits where participants met with the dietitian, food</p>

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		records were used as a tool to show how well they were meeting the prescribed diet.
Ma 2013 23229846	More intensive intervention only: The E-LITE lifestyle coach, a registered dietitian certified to deliver the GLB program, and a contracted fitness instructor jointly taught all the classes at the participating clinic	More intensive intervention only: The E-LITE lifestyle coach, a registered dietitian certified to deliver the GLB program, and a contracted fitness instructor jointly taught all the classes at the participating clinic
Nilsen 2011 22117618	The IIG program was interdisciplinary (dietitian, physiotherapist, ergonomist, nurse and physician).	The IIG program was interdisciplinary (dietitian, physiotherapist, ergonomist, nurse and physician).
Oldroyd 2006 16297488	The physiotherapist assessed participants' level of physical activity and readiness to change at baseline and provided a graded physical activity plan, tailored to the participant's lifestyle and designed to enable them to achieve 20–30 min of aerobic activity at least once a week.	The dietitian used motivational interviewing to develop an individual action plan for behaviour change
Patrick 2013 23759410	See Diet Counselor	<p>Participants in the website-only intervention group received a phone call from a health consultant if he or she did not log on to the web program after repeated email reminders.</p> <p>Participants in the website, monthly group sessions, and follow-up calls intervention group attended monthly 90 min group sessions of 5–10 adolescents and their parents where they discussed the behavioral skills from the web tutorials. Participants in this condition also received brief (~20 min) bimonthly phone calls from the health counselor reviewing concepts presented in the web tutorial and reinforcing behavioral strategies such as goal setting and problem solving of barriers/solutions.</p> <p>Participants in the website and short message service intervention group could communicate via text message with a health counselor if they had any questions.</p> <p>Participants in the usual care group were encouraged to attend three 1 h group nutrition sessions at Rady Children's Hospital of San Diego during the first 6 weeks.</p>

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Penn 2009 19758428	Behavioral interventions consisted of regular individual advice from a dietitian and physiotherapist trained in motivational interviewing	Behavioral interventions consisted of regular individual advice from a dietitian and physiotherapist trained in motivational interviewing
Penn 2013 24227871	NLNY trainers delivered a 10-week programme. Each NLNY session comprised a supervised PA or, on two or three occasions within each 10-week programme, a cookery session, followed by a reflective discussion that covered PA, nutrition, weight management and strategies for behaviour change. Sessions were leisure centre based, but also included trainer-led walks. The supported cookery sessions were designed to encourage healthy eating and to demonstrate the ease with which healthy food could be prepared. Nutritional information incorporated the importance of reading food labels with advice based on the Eat-well plate, including reduction in fat and increase in fibre intake, in line with the DPS protocol and NICE guidance. The trainers introduced behaviour change strategies (including goal setting, action planning, barrier identification, social support, self-monitoring, advance planning for relapse prevention and contingent rewards), as the need arose, with regular repetition during the supported sessions.	See Physical Activity Counselor
Roumen 2008 18445174	Individual advice is given on how to increase daily physical activity (walking, cycling, swimming), and goals are set. Furthermore, subjects are encouraged to participate in an exercise program, especially designed for this study, including components of aerobic exercise training and components of resistance training. Subjects have free access to these training sessions, and are stimulated to participate for at least 1 h a week.	Dietary advice is given at regular intervals by a skilled dietitian on an individual basis after consideration of a 3 days food record
Saito 2011 21824948		Irrespective of the assigned groups, all the participants were individually instructed to reduce total energy intake and increase physical activity, aiming at a 5% reduction in body weight, through the help of nurses, dietitians, physical therapists, and physicians. We used existing human and material resources of

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		each local study center as much as possible. Nurses and dietitians were mainly involved in the intervention at most local study centers, although it depended on the personnel situation at each center
Sakane 2011 21235825		When needed, the study nurse could ask a part-time dietitian for diet counseling.
Savoie 2014 24062325	The exercise component was facilitated by an exercise physiologist or physical therapist.	The behavior modification component, primarily facilitated by the dietitian, used techniques such as self-awareness, goal setting, stimulus control, coping skills training, cognitive behavior strategies, and contingency management.
Sepah 2014 24723130	See Diet Counselor	Each group of participants was led by a professional health coach, who was trained in a manner consistent with CDC DPRP standards for lifestyle coaches. Health coaches served an important moderating and personalizing function by communicating with participants via private messages or telephone calls. Health coaches kept participant discussions on track, provided feedback on food logs and physical activity progress, and provided individualized counseling using techniques such as motivational interviewing.
Tuomilehto 2001 11333990	Supervised, progressive, individually tailored, circuit-type resistance-training sessions were also offered with the aim of improving the functional capacity and strength of the large muscle groups; subjects were instructed to perform a moderate to high number of repetitions and to take a break of 15 to 60 seconds between the stations on the circuit.	Each subject in the intervention group had seven sessions with a nutritionist during the first year of the study and one session every three months thereafter.
Vermunt 2011 21775759	Individual consultations were supported by five group meetings to give more detailed information on diet and exercise. These 1-h meetings were conducted by trained dietitians (meetings 1, 2, 4, and 5) and physiotherapists (meeting 3).	Individual consultations were supported by five group meetings to give more detailed information on diet and exercise. These 1-h meetings were conducted by trained dietitians (meetings 1, 2, 4, and 5) and physiotherapists (meeting 3).



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Vojta 2013 23498291	In each session, a trained Lifestyle Coach at the local YMCA teaches strategies for incorporating physical activity and healthy eating into daily life, changing behavior, and identifying and overcoming barriers that may inhibit success and participant progress. The Lifestyle Coach monitors program outcomes including attendance, weight, and weekly tracking of food consumption and physical activity during each session.	

\* Of primary study.