

## Successful weight loss maintenance: a systematic review of weight control registries

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**Table S1.** Methodological quality assessment of articles.

<b>Reference</b>	<b>Study design</b>	<b>Selection bias</b>	<b>Withdrawals and drop-outs</b>	<b>Confounders</b>	<b>Data collection</b>	<b>Data analysis</b>	<b>Reporting</b>	<b>Global</b>
4	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
5	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
6	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
7	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
8	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
21	Moderate	Weak	Moderate	Strong	Strong	Strong	Strong	<b>Moderate</b>
22	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
23	Moderate	Weak	Moderate	Strong	Strong	Strong	Strong	<b>Moderate</b>
24	Moderate	Weak	Moderate	Strong	Strong	Strong	Strong	<b>Moderate</b>
25	Moderate	Weak	Moderate	Strong	Strong	Strong	Strong	<b>Moderate</b>
26	Moderate	Weak	No rating	Strong	Strong	Strong	Moderate	<b>Moderate</b>
27	Moderate	Weak	Moderate	Strong	Strong	Strong	Strong	<b>Moderate</b>
28	Moderate	Weak	Moderate	Strong	Strong	Strong	Strong	<b>Moderate</b>
29	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>

**Table S1.** Methodological quality assessment of articles (Continued).

<b>Reference</b>	<b>Study design</b>	<b>Selection bias</b>	<b>Withdrawals and drop-outs</b>	<b>Confounders</b>	<b>Data collection</b>	<b>Data analysis</b>	<b>Reporting</b>	<b>Global</b>
30	Moderate	Weak	Moderate	Strong	Strong	Strong	Strong	<b>Moderate</b>
31	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
32	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
33	Moderate	Weak	Moderate	Strong	Strong	Strong	Strong	<b>Moderate</b>
34	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
35	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
36	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
37	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
38	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
39	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
40	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
41	Moderate	Weak	Moderate	Strong	Strong	Strong	Strong	<b>Moderate</b>
42	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>

**Table S1.** Methodological quality assessment of articles (Continued).

<b>Reference</b>	<b>Study design</b>	<b>Selection bias</b>	<b>Withdrawals and drop-outs</b>	<b>Confounders</b>	<b>Data collection</b>	<b>Data analysis</b>	<b>Reporting</b>	<b>Global</b>
43	Moderate	Weak	Moderate	Strong	Strong	Strong	Strong	<b>Moderate</b>
44	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
45	Moderate	Weak	No rating	Strong	Strong	Strong	Moderate	<b>Moderate</b>
46	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
47	Moderate	Weak	No rating	Strong	Strong	Weak	Strong	<b>Weak</b>
48	Moderate	Weak	Moderate	Strong	Moderate	Strong	Strong	<b>Moderate</b>
49	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
50	Moderate	Weak	No rating	Strong	Moderate	Strong	Strong	<b>Moderate</b>
51	Moderate	Weak	Moderate	Strong	Strong	Strong	Strong	<b>Moderate</b>
52	Moderate	Weak	No rating	Weak	Strong	Strong	Strong	<b>Weak</b>
53	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
54	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
55	Moderate	Weak	No rating	Strong	Moderate	Strong	Strong	<b>Moderate</b>
56	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>

**Table S1.** Methodological quality assessment of articles (Continued).

<b>Reference</b>	<b>Study design</b>	<b>Selection bias</b>	<b>Withdrawals and drop-outs</b>	<b>Confounders</b>	<b>Data collection</b>	<b>Data analysis</b>	<b>Reporting</b>	<b>Global</b>
57	Moderate	Weak	Moderate	Strong	Strong	Strong	Strong	<b>Moderate</b>
58	Moderate	Weak	No rating	Strong	Moderate	Strong	Strong	<b>Moderate</b>
59	Moderate	Weak	No rating	Weak	Weak	Strong	Strong	<b>Weak</b>
60	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
61	Moderate	Weak	No rating	Strong	Weak	Strong	Strong	<b>Weak</b>
62	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
63	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
64	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
65	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
66	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>
67	Moderate	Weak	No rating	Strong	Strong	Strong	Strong	<b>Moderate</b>

**Table S2.** Weight control registries' and participants' characteristics.

<b>Designation</b>	<b>National Weight Control Registry (NWCR)</b> 4,5,21-51	<b>Portuguese Weight Control Registry (PWCR)</b> 6,52-54	<b>German Weight Control Registry (GWCR)</b> 8,55-58	<b>Finnish Weight Control Registry (FWCR)</b> 7,59-61	<b>MedWeight</b> 62-67
<b>Weight Control Registries' Procedures</b>					
<b>Informed consent form</b>	Yes	Yes	Yes	Yes	Yes
<b>Ethical approval</b>	Yes. By the Miriam Hospital Institutional Review Board for the Protection of Human Subjects in Research.	Yes. By the Ethics Committee of the Faculty of Human Kinetics, University of Lisbon.	Yes. By the Ethics Committee of the Medical School at the University of Erlangen-Nuremberg.	Yes. By the Ethics Committee, Department of Medicine, Helsinki University Hospital.	Yes. By the Harokopio University Ethics Committee.
<b>Recruitment procedure</b>	Local media (newspapers, magazines, radio, and television); physician and dietitian referrals; mailing lists of commercial weight loss programs. Website: <a href="http://www.nwcr.ws">http://www.nwcr.ws</a> <sup>a</sup>	Local and social media (newspapers, radio, television, Facebook); partnership with the General Directorate-General of Health and with gyms/health clubs/companies. Website: <a href="http://panosr.fmh.ulisboa.pt/rncp">http://panosr.fmh.ulisboa.pt/rncp</a>	Local media (press conferences, broad publicity campaign)	Local media (free and paid newspapers and magazines); healthcare centers and hospitals. Website: <a href="http://www.sphr.fi">http://www.sphr.fi</a> <sup>a</sup>	Local and social media. Website; <a href="http://medweight.hua.gr">http://medweight.hua.gr</a>
<b>Rewards for participation</b>	To improve the 3-year response rate, individuals who did not complete the full assessment battery were sent \$5 and asked to report their weight.	No	A financial compensation was offered for follow-up measurements.	No <sup>b</sup>	No

**Table S2.** Weight control registries' and participants' characteristics (Continued).

<b>Designation</b>	<b>National Weight Control Registry (NWCR)</b> 4,5,21-51	<b>Portuguese Weight Control Registry (PWCR)</b> 6,52-54	<b>German Weight Control Registry (GWCR)</b> 8,55-58	<b>Finnish Weight Control Registry (FWCR)</b> 7,59-61	<b>MedWeight</b> 62-67
<b>Weight Control Registries' Procedures (Continued)</b>					
<b>Eligibility screening</b>	Online/e-mail/telephone registration; telephone screening questionnaire; contact of a health professional, family member, or friend who could confirm participants' weight loss, or before-and-after weight loss pictures.	Online/e-mail/telephone registration; telephone screening questionnaire; contact of a health professional, family member, or friend who could confirm participants' weight loss, or before-and-after weight loss pictures.	Telephone/letter or online screening questionnaire	Online screening questionnaire; participants' weight history could be confirmed (if necessary) through their healthcare system/network <sup>b</sup>	Online screening questionnaire
<b>Assessments and instruments (baseline)<sup>c</sup></b>					
<b>Assessments (format)</b>	Offsite; Paper form or Online <sup>b</sup>	Onsite or offsite (when participants were not able to go to the site); Paper form	Offsite; Online (secuTrial software) or paper form	Offsite; Online (individualized link)	Offsite; Online

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Designation	National Weight Control Registry (NWCR) 4,5,21-51	Portuguese Weight Control Registry (PWCR) 6,52-54	German Weight Control Registry (GWCR) 8,55-58	Finnish Weight Control Registry (FWCR) 7,59-61	MedWeight 62-67
<b>Assessments and instruments (baseline)<sup>c</sup> (Continued)</b>					
<b>Participant characterization</b>	<ul style="list-style-type: none"> <li>i) Sociodemographic information (e.g., age, sex, education level, marital status, ethnicity);</li> <li>ii) Weight history (age at onset of overweight, parental and sibling weight status, maximum lifetime weight, current weight, and duration of the required minimum weight loss);</li> <li>iii) Health history;</li> <li>iv) Weight history timeline (to assess weight changes);</li> <li>v) Weight loss and weight maintenance strategies.</li> </ul>	<ul style="list-style-type: none"> <li>i) Sociodemographic information (e.g., age, sex, marital status, employment status, education level, smoking status);</li> <li>ii) Weight history (family weight history, previous weight loss attempts; motives and triggers to lose weight);</li> <li>iii) Weight history timeline (to assess weight changes);<sup>b</sup></li> <li>iv) Health history;<sup>b</sup></li> <li>v) Weight loss and weight maintenance strategies.</li> </ul>	<ul style="list-style-type: none"> <li>i) Sociodemographic data (e.g., age, sex, partnership, employment status, education level);</li> <li>ii) Weight history;</li> <li>iii) Weight loss strategies;</li> <li>iv) Reasons for weight loss;</li> <li>v) Weight cycling;</li> <li>vi) Frequency of weighing;</li> <li>vii) Medical co-morbidity; Health care utilization;</li> <li>viii) Obesity attribution;</li> <li>ix) Eating and weighing habits.</li> </ul>	<ul style="list-style-type: none"> <li>i) Sociodemographic information (e.g., age, sex, marital status, size of household, type of accommodation, education, work, earnings, religion, if the participant is a woman: number of children, menstruation started/ended);</li> <li>ii) Weight history (history of weight loss attempts/ methods; motivational factors);</li> <li>iii) General health (medication, participant and relatives' diseases, subjective health);</li> <li>iv) Lifestyle habits (smoking habit, alcohol consumption, sleep, leisure time, physical activity);</li> <li>v) Changes in diet, eating habit, exercise, weighing;</li> <li>vi) Knowledge (health risks, nutritional content and energy intake);</li> </ul>	<ul style="list-style-type: none"> <li>i) Sociodemographic information (e.g., age, sex, education level, marital status, employment status, type of occupation, type of residence area, siblings);</li> <li>ii) Weight history (weight loss methods, weight loss and maintenance motives, frequency of self-weighing, history of overweight during childhood/adolescence);</li> <li>iii) Previous body weight cycles - 25-item <b>Weight Cycling Questionnaire</b>;</li> <li>iv) Medical history (including gastrointestinal function);</li> <li>v) Lifestyle habits (Smoking status, sleep quality assessed through the validated Greek version of the <b>Athens Insomnia Scale – AIS</b>, frequency of leisure time activities and socializing);</li> </ul>



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<b>Assessments and instruments (baseline)<sup>c</sup> (Continued)</b>					
<b>Participant characterization (Continued)</b>				vii) Difficulties and support during weight loss and maintenance.	vi) Dietary behaviors (eating rate, involvement in meal preparation).
<b>Psychometry</b>	i) Depressive symptoms – <b>Center for Epidemiological Studies Depression Scale (CES-D)</b> ; ii) Stressful situations appraisal – <b>Perceived Stress Scale (PSS4)</b> ; iii) Frequency of objective binge eating episodes over the previous 28 days – <b>Eating Disorder Examination-Questionnaire (EDE-Q)</b> ; iv) Psychiatric symptoms – <b>General Symptom Index (Symptom Checklist-90 Revised – SCL-90-R)</b> ; 	i) General health-related quality of life – <b>Short-Form Health-Related Quality of Life (SF-36)</b> ; ii) Weight-related quality of life – <b>Impact of Weight on Quality of Life (IWQOL)</b> ; iii) Self-esteem – <b>Rosenberg Self-Concept/Self-Esteem Scale</b> ; iv) Body image dissatisfaction – <b>Body Image Assessment Questionnaire (BIA)</b> ; 	i) Weight-specific measure of health-related quality of life – <b>Impact of Weight on Quality-of-Life-Lite Scale</b> ; ii) Depressive and somatic symptoms – subscales of the German version of <b>Patient Health Questionnaire (PHQ-D)</b> ; iii) Impulsivity – <b>Barrett Impulsiveness Scale</b> ; iv) Social support – seven-item short form <b>Social Support Questionnaire (F-Sozu-7)</b> ; v) Retrospective effect of weight-related teasing – <b>Effect Subscale of the German version of the Perception of Teasing Scale (POTS)</b> ; 	i) <b>Finnish version of the Ten Item Personality Inventory (TIPI)</b> to measure personality traits according to the FFM5.	i) Personality traits – <b>Ten Item personality Traits (TIPI)</b> ; ii) Trait of impulsivity – validated Greek version of the <b>Barratt Impulsiveness Scale (BIS)</b> ; iii) Perceived control of weight status/fluctuations – <b>Multidimensional Health Locus of Control - MHLC scales</b> ; iv) Social support – <b>Social support for Healthy Behaviors scale</b> .

**Table S2.** Weight control registries' and participants' characteristics (Continued).

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<b>Assessments and instruments (baseline)<sup>c</sup> (Continued)</b>					
<b>Psychometry (Continued)</b>	v) Eating behavior (cognitive restraint, disinhibition and hunger) – <b>Eating Inventory/ Three-Factor Eating Questionnaire.</b>	v) Experience of and preoccupation with being fat – <b>Body Shape Questionnaire (BSQ);</b> vi) Exercise motivation – <b>Intrinsic Motivation Inventory (IMI);</b> vii) Self-efficacy for exercise – <b>Exercise Self-Efficacy Questionnaire (ESE);</b> viii) Social support for exercise – <b>Exercise Social Support (ESS);</b> ix) External, introjected, identified and intrinsic forms of regulation for exercise behavior – <b>Behavioral Regulation in Exercise Questionnaire (BREQ-2);</b>	vi) Non-normative eating behaviors and eating-related psychopathology – <b>Eating Disorder Examination-Questionnaire (EDE-Q);</b> vii) Eating behavior (restrained eating, emotional eating and external eating) – <b>Dutch Eating Behavior Questionnaire (DEBQ).</b>		

Table S2. Weight control registries' and participants' characteristics (Continued).

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<b>Assessments and instruments (baseline)<sup>c</sup> (Continued)</b>					
<b>Psychometry (Continued)</b>		x) Eating behavior (cognitive restraint, disinhibition and perceived hunger) – <b>Eating Inventory/ Three-Factor Eating Questionnaire;</b> xi) Eating behavior (restrained eating, emotional eating and external eating) – <b>Dutch Eating Behavior Questionnaire (DEBQ);</b> xii) Stress response – <b>Coping Questionnaire (COPE);</b> xiii) Depressive symptoms – <b>Beck Depression Inventory (BDI);</b> xiv) Social and physical anxiety – <b>Social Physique Anxiety Scale;</b> xv) Self-determined way of functioning – <b>Self Determination Scale;</b>			

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<b>Assessments and instruments (baseline)<sup>c</sup> (Continued)</b>					
<b>Psychometry (Continued)</b>		xvi) Basic needs satisfaction in general – <b>Basic Need Satisfaction Scale (BNS).</b>			
<b>Dietary intake</b>	Total energy intake (kcal/day), macronutrients (fat, carbohydrates and protein) and micronutrients intake – <b>Block Food Frequency Questionnaire</b>	Total energy intake (kcal/day) and macronutrients (fat, carbohydrates and protein) and micronutrients intake – <b>Semi-quantitative food-frequency questionnaire</b>	Food intake structure questionnaire; Hedonics of food intake <sup>b</sup>	Food intake structure questionnaire <sup>b</sup>	Total energy intake (kcal/day), macronutrients (fat, carbohydrates and protein) intake; food groups intake, adherence to the Mediterranean diet, meal patterns and environmental aspects of the meal – Two telephone <b>24-h dietary recalls</b> (conducted 10 days apart, weekdays and weekends).

**Table S2.** Weight control registries' and participants' characteristics (Continued).

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<b>Assessments and instruments (baseline)<sup>c</sup> (Continued)</b>					
<b>Physical Activity</b>	Minutes of light, moderate and vigorous physical activity, sedentary activities, sleep i) <b>Accelerometry</b> ; <sup>b</sup> ii) <b>Doubly labelled water</b> ; <sup>b</sup> iii) <b>Paffenbarger Physical Activity Questionnaire</b> .	Minutes of light, moderate and vigorous physical activity, lifestyle physical activity, sedentary activities, sleep i) <b>Accelerometry</b> ; ii) <b>Paffenbarger Physical Activity Questionnaire</b> ; iii) <b>Seven-day Physical Activity Recall</b> ; iv) <b>Lifestyle Physical Activity Index</b> .	Minutes of walking, moderate and vigorous physical activity, sedentary activities – <b>International Physical Activity Questionnaire</b> <sup>b</sup>	Occupational and leisure-time physical activity – <b>Saltin-Grimby Physical Activity Level Scale</b> <sup>b</sup>	Minutes of walking moderate and vigorous physical activity, sedentary activities – Greek short version of the <b>International Physical Activity Questionnaire (IPAQ)</b>
<b>Anthropometry</b>	Self-reported weight and height	Objectively measured weight, height and waist circumference	Self-reported weight and height	Self-reported weight and height	Self-reported weight and height

<sup>a</sup>Websites were provided as an extra information, even they were not part of the recruitment procedure.

<sup>b</sup>This information was provided by the Principal Investigator of the weight control registry.

<sup>c</sup>Follow-up assessments differ from baseline and will not be reported as there is not much information, or it is somehow contradictory.