

# Mobile Phone and Web 2.0 Technologies for Weight Management: A Systematic Scoping Review

## Multimedia Appendix 1: Search strategies

### *Search components for basic search strings*

#### **S1: Weight management**

**MeSH1.1:** [Obesity] or [Obesity, Morbid] or [Obesity, Abdominal] only this term

**MeSH1.2:** [Overweight] explode all trees

**MeSH1.3:** [Body Mass Index] only this term

**MeSH1.4:** [Body Weight] only this term

**MeSH1.5:** [Body Weight Changes] only this term

**MeSH1.6:** [Weight Loss] only this term

**MeSH1.7:** [Weight Gain] only this term

**MeSH1.8:** [Skinfold thickness] only this term

**MeSH1.9:** [Waist-hip ratio] only this term

**MeSH1.10:** [Abdominal fat] explode all trees

**MeSH1.11:** [Weight reduction programs] only this term

**Keywords1:** obes\$ or (overweight\$ or "over weight\$" or overeat\$ or "over eat\$" or overfeed\$ or "over feed\$") or ("body mass index" or BMI) or (body near (weight or mass)) or ("body weight" adj1 change\$) or (weight adj1 (chang\$ or los\$ or gain\$ or maint\$ or decreas\$ or reduc\$ or watch\$ or control\$ or manag\$)) or ((skinfold and thickness\$) or ("waist-hip" or "waist-to-hip") and ratio\$) or (abdominal and fat\$)

**S1 = or /MeSH1.1-1.11 or Keywords1**

#### **S2: Diet**

**MeSH2.1:** [Diet] expand all trees

**MeSH2.2:** [Diet Therapy] expand all trees

**MeSH Subheading:** Dietetics/education (ed), methods (mt)

**MeSH2.3:** [Diet Records] only this term

**MeSH2.4:** [Dietary Fats] expand all trees

**MeSH2.5:** [Fruit] explode all trees

**MeSH2.6:** [Vegetables] explode all trees

**Keywords2:** (diet or diets or dieting or dietary) or (diet\$ adj2 (modific\$ or therapy or intervention\$ or strateg\$ or program\$ or management or scheme\$)) or (nutrition adj2 (modific\$ or therapy or intervention\$ or strateg\$ or program\$ or management or scheme\$)) or ("low calorie\$" or hypocaloric or "hypo caloric" or "calorie control\$") or (health\$ adj1 eating) or (fasting or "modified fast\$") or (fruit or vegetable\$) or (high fat\$ or low fat\$ or fatty food\$).

**S2 = or /MeSH2.1-2.6 or Keywords2**

#### **S3: Physical Activity**

**MeSH3.1:** [Exercise] explode all trees

**MeSH3.2:** [Physical Activity] only this term

**MeSH3.3:** [Physical Fitness] only this term

**MeSH3.4:** [Physical Exertion] only this term

**MeSH3.5:** ["Physical Education and Training"] explode all trees

**MeSH3.6:** [Sports] explode all trees

**MeSH3.7:** [Exercise Therapy] explode all trees

**Keywords3:** (exercis\$ adj5 (train\$ or physical\$ or activ\$)) or (exercise and (therapy or therapies or activity or activities or class\$ or program\$ or group\$ or session\$ or scheme\$)) or ((exercise\$ adj3 aerobic\$) or aerobics) or (physical\$ adj5 (fit\$ or train\$ or activ\$ or endur\$ or exertion\$)) or (physical\$ adj (activit\$ or fit\$ or exertion\$)) or ("physical activity" or "physical fitness" or "physical education" or "physical therapy" or "physical inactivity") or (sedentary behavio?r) or sport\$ or (walking or jogging or running or cycling) or ((lifestyle or life-style) adj3 (active or activit\$ or physical\$)).

**S3 = or /MeSH3.1-3.6 or Keywords3**

## **S4: Smartphones & mHealth**

**MeSH4.1:** [Cellular Phone] expand all trees

**MeSH4.2:** [Computers, Handheld] only this term

**MeSH4.3:** [Mobile applications] only this term

**MeSH4.3:** [MP3-Player] only this term

**Keywords4.1:** (smartphone\$ or smart-phone\$ or "smart-phone\$" or "smart phone\$") or ((smart or cell\$ or mobile) adj phone\$) or ("cellular phone\$" or "cellphone\$" or "mobile phone\$" or "mobile telephone\$") or ("smartphone\$ app?" or "mobile app?") or ((app? or application?) adj2 (smartphone\$ or smart-phone\$ or "smart-phone\$" or "smart phone\$" or "mobile\$" or phone\$ or "cellular phone\$" or "cellphone\$" or "cell phone\$")) or

**Keywords4.2:** (Android adj5 (smartphone\$ or smart-phone\$ or "smart-phone\$" or "smart phone\$" or "mobile\$" or phone\$ or "cellular phone\$" or "cellphone\$" or "cell phone\$" or "mobile phone\$" or "mobile telephone\$" or app? or application?)) or ("Android Operating System\$" or "Android OS" or "Google Android" or (Android adj3 Google)) or (iOS adj5 (smartphone\$ or smart-phone\$ or "smart-phone\$" or "smart phone\$" or "mobile\$" or phone\$ or "cellular phone\$" or "cellphone\$" or "cell phone\$" or "mobile phone\$" or "mobile telephone\$" or app? or application?)) or ("Apple iPhone OS" or "Apple iOS" or "iPhone operative system\$" or (iOS adj3 phone\$)) or ("Windows mobile") adj5 (smartphone\$ or smart-phone\$ or "smart-phone\$" or "smart phone\$" or "mobile\$" or phone\$ or "cellular phone\$" or "cellphone\$" or "cell phone\$" or "mobile phone\$" or "mobile telephone\$" or app? or application?)) or ((Nokia or Samsung or BlackBerry) adj5 (smartphone\$ or smart-phone\$ or "smart-phone\$" or "smart phone\$" or "mobile\$" or phone\$ or "cellular phone\$" or "cellphone\$" or "cell phone\$" or "mobile phone\$" or "mobile telephone\$" or app? or application?)) or ("Android Market\$" or "Apple App Store\$" or "App Store\$" or "iTunes" or "BlackBerry App World" or "BlackBerry World" or "Ovi Store" or "Nokia Ovi Store" or "Google Play" or "Windows Phone Apps+Games") or (iPhone\$ or iPod\$ or "iPod Touch" or iPad\$ or "i-Phone\$" or "i-Pod\$" or "i-Pad\$") or (iPhone\$ or iPod\$ or "iPod Touch" or iPad\$)

**Keywords4.3:** (mhealth or "m-health" or mHealth or "m-Health")

**MeSH4.4:** [Telemedicine] only this term

**Keywords4.4:** (telemed\$ or tele-med\$ or telehealth\$ or tele-health\$ or "mobile health")

**Keywords4.5:** (ehealth or "e-health" or eHealth or "e-Health")

**S4 = (or/MeSH4.1-3 or Keywords4.1-2) or Keywords4.3 or (Keywords4.3 and (MeSH4.4 or Keywords4.4 or Keywords4.5))**

## **S5: Social Media**

**MeSH5.1:** [Social Media] explode all trees

**MeSH5.2:** [Blogging] explode all trees

**Keywords5:** ("web 2.0" or "web2.0" or "social media" or "social software" or "social web" or "social media app\$" or "social media technolog\$" or "social media platform\$")

("social networking sit\$" or "social networking websit\$" or "social networking communit\$" or "digital social network\$" or "online social network\$")

(Twitter or tweet\$)

Facebook or (blog\$ or vlog\$ or blogging or vlogging) or "RSS feed\$" or podcast\$.

**S5 = or/ MeSH5.1-2 or Keywords5**

## **Final search strategy: (S1 or S2 or S3) and (S4 or S5)**

### ***Basic keyword search string***

(obese or obesity or overweight or "body mass index" or "body mass indices" or "body mass indexes" or BMI or "waist-hip ratio" or "waist-to-hip ratio" or "weight gain" or "weight loss" or sports or "physical activity" or "exercise" or "walking" or "diet") AND (smartphone OR smart-phone OR "smart phone" OR "cellular phone" OR cellphone OR "mobile phone" OR "mobile telephone" OR "smartphone app\*" OR "mobile app\*" OR handheld OR hand-held OR PDA OR Android OR iOS OR BlackBerry OR Nokia OR Symbian OR iPhone OR iPod OR iPad OR mp3 OR "web 2.0" OR "web2.0" OR "social media" OR "social software" OR "social web" OR "social networking" OR Twitter OR tweet OR Facebook OR blog OR "RSS feed" OR podcast)

## **Example of Search Strategy**

### ***Medline (OvidSP)***

MeSH = Medical subject heading (Medline medical index term); exp = exploded MeSH (Ovid); the dollar sign (\$) or the asterisk (\*) stand for any character(s); the question mark (?) substitutes one or no characters; tw = text word, including title, abstract and keyword; pt = publication type; adjX = X adjacent terms.

#	Searches
1	Obesity/ or Obesity, Abdominal/ or Obesity, Morbid/
2	exp Overweight/
3	Body Mass Index/

4	Body Weight/
5	Body Weight Changes/
6	Weight Loss/
7	Weight Gain/
8	Skinfold Thickness/
9	Waist-hip ratio/
10	exp Abdominal fat/
11	Weight Reduction Programs/
12	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11
13	obes\$.tw.
14	(overweight\$ or "over weight\$" or overeate\$ or "over eat\$" or overfeed\$ or "over feed\$").tw.
15	("body mass index" or BMI).tw.
16	(body adj (weight or mass)).tw.
17	(weight adj1 (chang\$ or los\$ or gain\$ or maint\$ or decreas\$ or reduc\$ or watch\$ or control\$ or manag\$)).tw.
18	(skinfold adj1 thickness\$).tw.
19	((("waist-hip" or "waist-to-hip") and ratio\$).tw.
20	(abdominal and fat\$).tw.
21	13 or 14 or 15 or 16 or 17 or 18 or 19 or 20
22	12 or 21
23	exp Diet/
24	exp Diet Therapy/
25	Dietetics/ed, mt
26	Diet Records/
27	exp Dietary Fats/
28	exp Fruit/
29	exp Vegetables/
30	23 or 24 or 25 or 26 or 27 or 28 or 29
31	(diet or diets or dieting or dietary).tw.
32	(diet\$ adj2 (modific\$ or therapy or intervention\$ or strateg\$ or program\$ or management or scheme\$)).tw.
33	(nutrition adj2 (modific\$ or therapy or intervention\$ or strateg\$ or program\$ or management or scheme\$)).tw.
34	("low calorie\$" or hypocaloric or "hypo caloric" or "calorie control\$").tw.
35	(health\$ adj1 eating).tw.
36	(fasting or "modified fast\$").tw.
37	(fruit or vegetable\$).tw.
38	("high fat\$" or "low fat\$" or "fatty food\$").tw.
39	31 or 32 or 33 or 34 or 35 or 36 or 37 or 38
40	30 or 39
41	exp Exercise/
42	Physical Activity/
43	Physical Fitness/
44	Physical Exertion/
45	exp "Physical Education and Training"/
46	exp Sports/
47	exp Exercise Therapy/
48	41 or 42 or 43 or 44 or 45 or 46 or 47
49	(exercis\$ adj5 (train\$ or physical\$ or activ\$)).tw.
50	(exercise and (therapy or therapies or activity or activities or class\$ or program\$ or group\$ or session\$ or scheme\$)).tw.
51	((exercis\$ adj3 aerobic\$) or aerobics).tw.
52	(physical\$ adj5 (fit\$ or train\$ or activ\$ or endur\$ or exertion\$)).tw.
53	(physical\$ adj (activit\$ or fit\$ or exertion\$)).tw.
54	physical education.tw.
55	("physical activity" or "physical fitness" or "physical education").tw.
56	("physical activity" or "physical fitness" or "physical education" or "physical therapy" or "physical inactivity").tw.
57	(fitness adj3 (class\$ or regime\$ or program\$)).tw.
58	sedentary behavio?.r.tw.
59	sport\$.tw.
60	(walking or jogging or running or cycling).tw.
61	((lifestyle or life-style) adj3 (active or activit\$ or physical\$)).tw.
62	49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61
63	48 or 62
64	exp Cellular Phone/
65	Computers, Handheld/
66	Mobile applications/
67	MP3-Player/
68	64 or 65 or 66 or 67
69	(smartphone\$ or smart-phone\$ or "smart-phone\$" or "smart phone\$").tw.
70	((smart or cell\$ or mobile) adj phone\$).tw.
71	("cellular phone\$" or "cellphone\$" or "mobile phone\$" or "mobile telephone\$").tw.
72	("smartphone\$ app?" or "mobile app?" or "smartphone\$ application?" or "mobile application?" ).tw.
73	((app? or application?) adj2 (smartphone\$ or smart-phone\$ or "smart-phones\$" or "smart phones\$" or "mobile\$" or phone\$ or "cellular phone\$" or "cellphone\$" or "cell phone\$" or "mobile phone\$" or "mobile telephone\$")).tw.

74	(Android adj5 (smartphone\$ or smart-phone\$ or "smart-phone\$" or "smart phone\$" or "mobile\$" or phone\$ or "cellular phone\$" or "cellphone\$" or "cell phone\$" or "mobile phone\$" or "mobile telephone\$" or app? or application?)).tw.
75	("Android Operating Systems\$" or "Android OS" or "Google Android" or (Android adj3 Google)).tw.
76	(iOS adj5 (smartphone\$ or smart-phone\$ or "smart-phone\$" or "smart phone\$" or "mobile\$" or phone\$ or "cellular phone\$" or "cellphone\$" or "cell phone\$" or "mobile phone\$" or "mobile telephone\$" or app? or application?)).tw.
77	("Apple iPhone OS" or "Apple iOS" or "iPhone operative system*" or (iOS adj3 phone\$)).tw.
78	("Windows mobile" adj5 (smartphone\$ or smart-phone\$ or "smart-phone\$" or "smart phone\$" or "mobile\$" or phone\$ or "cellular phone\$" or "cellphone\$" or "cell phone\$" or "mobile phone\$" or "mobile telephone\$" or app? or application?)).tw.
79	((Nokia or Samsung or BlackBerry) adj5 (smartphone\$ or smart-phone\$ or "smart-phone\$" or "smart phone\$" or "mobile\$" or phone\$ or "cellular phone\$" or "cellphone\$" or "cell phone\$" or "mobile phone\$" or "mobile telephone\$" or app? or application?)).tw.
80	("Android Market\$" or "Apple App Store\$" or "App Store\$" or "iTunes" or "BlackBerry App World" or "BlackBerry World" or "Ovi Store" or "Nokia Ovi Store" or "Google Play" or "Windows Phone Apps+Games").tw.
81	(iPhone\$ or iPod\$ or "iPod Touch" or iPad\$ or "i-Phone\$" or "i-Pod\$" or "i-Pad\$").tw.
82	69 or 70 or 71 or 72 or 73 or 74 or 75 or 76 or 77 or 78 or 79 or 80 or 81
83	(mhealth or "m-health" or mHealth or "m-Health").tw.
84	exp Telemedicine/
85	(telemedic\$ or tele-medic\$ or telehealth\$ or tele-health\$ or "mobile health\$").tw.
86	(ehealth or "e-health" or eHealth or "e-Health").tw.
87	82 and (84 or 85 or 86)
88	87 or 83 or 82
89	Social Media/
90	Bloggng/
91	89 or 90
92	("web 2.0" or "web2.0" or "social media" or "social software" or "social web" or "social media app*" or "social media technolog*" or "social media platform*").tw.
93	("social networking sit*" or "social networking websit*" or "social networking communit*" or "digital social network*" or "online social network*").tw.
94	(Twitter or tweet*).tw.
95	Facebook.tw.
96	(blog* or vlog* or blogging or vlogging).tw.
97	RSS feed*.tw.
98	podcast*.tw.
99	92 or 93 or 94 or 95 or 96 or 97 or 98
100	91 or 99
101	22 or 40 or 63
102	88 or 100
103	101 and 102
104	limit 103 to (english language and english)
105	limit 104 to (yr="2004 - 2014")