

## Eating Disorders and Obesity in Virtual Reality: A Comprehensive Research Chart

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**H**ERE, WE PROVIDE A COMPREHENSIVE LISTING of re-  
search done on eating disorders and obesity in virtual  
reality. MEDLINE was searched on July 10, 2015, for the

keywords “virtual reality and eating disorders” and “virtual  
reality and obesity.” Results from that search are presented  
herein.

<i>Year</i>	<i>Author</i>	<i>Title</i>	<i>Publication</i>	<i>Topic</i>
1997	Riva G, Melis L	Virtual reality for the treatment of body image disturbances	Virtual Reality in Neuro-Pscho-Physiology 44:95–111	Body image
1997	Riva G, Bolzoni M, Carella F, Galimberti C, Griffin MJ, Lewis CH, Luongo R, Mardegan P, Melis L, Molinari-Tosatti L, Poerschmann C, Rovetta A, Rushton S, Selis C, Wann J	Virtual reality environments for psycho-neuro-physiological assessment and rehabilitation	Studies in Health Technology and Informatics 39:34–45	VR assessment and rehabilitation
1998	Riva G, Bacchetta M, Baruffi M, Rinaldi S, Molinari E	Experiential cognitive therapy: a VR based approach for the assessment and treatment of eating disorders	Virtual Environments in Clinical Psychology and Neuroscience 58:120–135	Experiential cognitive therapy (ECT)
1999	Riva G, Bacchetta M, Baruffi M, Borgomainerio E, Defrance C, Gatti F, Galimberti C, Fontaneto S, Marchi S, Molinari E, Nagues P, Rinaldi S, Rovetta A, Ferretti GS, Tonci A, Wann J, Vincelli F	The use of PC based VR in clinical medicine: the VREPAR projects	Technology and Health Care 7:261–269	VR in clinical medicine
1999	Riva G, Bacchetta M, Baruffi M, Defrance C, Gatti F, Galimberti C, Nagues P, Ferretti GS, Tonci A	VREPAR 2: VR in eating disorders	CyberPsychology and Behavior 2:77–79	Eating disorders—VR treatment

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<i>Year</i>	<i>Author</i>	<i>Title</i>	<i>Publication</i>	<i>Topic</i>
1999	Perpiñá C, Botella C, Baños R, Marco H, Alcañiz M, Quero S	Body image and virtual reality in eating disorders: is exposure to virtual reality more effective than the classical body image treatment?	CyberPsychology and Behavior 2:149–155	Body image
1999	Riva G, Bacchetta M, Baruffi M, Borgomainerio E, Defrance C, Gatti F, Galimberti C, Fontaneto S, Marchi S, Molinari E, Nuges P, Rinaldi S, Rovetta A, Ferretti GS, Tonci A, Wann J, Vincelli F	VREPAR projects: the use of virtual environments in psycho-neuro-physiological assessment and rehabilitation	CyberPsychology and Behavior 2:69–76	VR assessment and rehabilitation
1999	Perpiñá C, Botella C, Baños R, Marco H, Alcañiz M, Quero S	Body image and virtual reality in eating disorders: is exposure to virtual reality more effective than the classical body image treatment?	CyberPsychology and Behavior 2:149–155	Eating disorders, body image
2001	Riva G, Bacchetta M, Baruffi M, Molinari E	Virtual reality-based multidimensional therapy for the treatment of body image disturbances in obesity: a controlled study	CyberPsychology and Behavior 4:511–526	Obesity, body image
2001	Riva G, Alcañiz M, Anolli L, Bacchetta M, Baños R, Beltrame F, Botella C, Galimberti C, Gamberini L, Gaggioli A, Molinari E, Mantovani G, Nuges P, Optale G, Orsi G, Perpina C, Troiañi R	The VEPSY updated project: virtual reality in clinical psychology	Cyberpsychology and Behavior 4:449–455	VR clinical assessment and treatment
2002	Riva G, Bacchetta M, Cesa G, Conti S, Molinari E	e-health in eating disorders: virtual reality and telemedicine in assessment and treatment	Studies in Health Technology and Informatics 02/10 85: 402–408	e-Health
2002	Riva G, Alcañiz M, Anolli L, Bacchetta M, Baños R, Beltrame F, Botella C, Galimberti C, Gamberini L, Gaggioli A, Molinari E, Mantovani G, Klinger E, Optale G, Orsi G, Perpiñá C, Troiani R	The VEPSY UPDATED project: technical and clinical rationale	Studies in Health Technology and Informatics 02/10 85:395–401	Telemedicine and VR
2002	Lozano JA, Alcañiz M, Gil JA, Moserrat C, Juan MC, Grau V, Varvaró H	Virtual food in virtual environments for the treatment of eating disorders	Studies in Health Technology and Informatics 02/10 85:268–273	Eating disorders—virtual food
2002	Riva G, Bacchetta M, Baruffi M, Molinari E	Virtual-reality-based multidimensional therapy for the treatment of body image disturbances in binge eating disorders: a preliminary controlled study	IEEE Transactions on Information Technology in Biomedicine 6:224–234	Binge eating, body image
2003	Riva G, Bacchetta M, Cesa G, Conti S, Molinari E	Six-month follow-up of in-patient experiential cognitive therapy for binge eating disorders	CyberPsychology and Behavior 6:251–258	Binge eating

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2003	Riva G, Alc��niz M, Anolli L, Bacchetta M, Ba��os R, Buselli C, Beltrame F, Botella C, Castelnuevo G, Cesa G, Conti S, Galimberti C, Gamberini L, Gaggioli A, Klinger E, Legeron P, Mantovani F, Mantovani G, Molinari E, Optale G, Ricciardiello L, Perpi��� C, Roy S, Spagnolli A, Troiani R, Weddle C	The VEPSY UPDATED Project: clinical rationale and technical approach	CyberPsychology and Behavior 6:433–439	VR clinical assessment and treatment
	Wiederhold BK and Wiederhold MD	The future of cybertherapy: improved options with advanced technologies	Studies in Health Technology and Informatics 2004;99:263–270	Eating and body dysmorphic disorders
2004	Riva G, Bacchetta M, Cesa G, Conti S, Molinari E	The use of VR in the treatment of eating disorders	Cybertherapy 99:121–163	Experiential cognitive therapy (ECT)
2004	Botella C, Quero S, Ba��os RM, Perpi��� C, Garc��a Palacios A, Riva G	Virtual reality and psychotherapy	Cybertherapy 99:37–54	Eating disorders—VR treatment
2004	Myers TC, Swan-Kremeier L, Wonderlich S, Lancaster K, Mitchell JE	The use of alternative delivery systems and new technologies in the treatment of patients with eating disorders	International Journal of Eating Disorders 36:123–143	Eating disorders—alternative delivery systems
2006	Riva G, Bacchetta M, Cesa G, Conti S, Castelnuevo G, Mantovani F, Molinari E	Is severe obesity a form of addiction? Rationale, clinical approach, and controlled clinical trial	CyberPsychology and Behavior 9:457–479	Obesity
2006	Guti��rrez-Maldonado J, Ferrer-Garc��a M, Caqueo-��rizar A, Letosa-Porta A	Assessment of emotional reactivity produced by exposure to virtual environments in patients with eating disorders	CyberPsychology and Behavior 9:507–513	Emotional reactivity to VR
2007	Riva G, Gaggioli A, Villani D, Preziosa A, Morganti F, Corsi R, Faletti G, Vezzadini L	NeuroVR: an open source virtual reality platform for clinical psychology and behavioral neurosciences	Studies in Health Technology and Informatics 15 125:394–399	VR platform
2008	Riva G, Manzoni M, Villani D, Gaggioli A, Molinari E	Why you really eat? Virtual reality in the treatment of obese emotional eaters	Studies in Health Technology and Informatics 16 132:417–419	Obesity treatment, Emotional eating
2009	Riva G, Carelli L, Gaggioli A, Gorini A, Vigna C, Algeri D, Repetto C, Raspelli S, Corsi R, Faletti G, Vezzadini L	NeuroVR 1.5 in practice: actual clinical applications of the open source VR system	Annual Review of Cybertherapy and Telemedicine 144:57–60	Obesity assessment and treatment
2009	Manzoni GM, Pagnini F, Gorini A, Preziosa A, Castelnuevo G, Molinari E, Riva G	Can relaxation training reduce emotional eating in women with obesity? An exploratory study with 3 months of follow-up	Journal of the American Dietetic Association 109:1427–1432	Emotional eating
2009	Ferrer-Garc��a M, Guti��rrez-Maldonado J, Caqueo-��rizar A, Moreno E	The validity of virtual environments for eliciting emotional responses in patients with eating disorders and in controls	Behavior Modification 33:830–854	Eating disorder
2010	Gorini A, Griez E, Petrova A, Riva G	Assessment of the emotional responses produced by exposure to real food, virtual food and photographs of food in patients affected by eating disorders	Annals of General Psychiatry 9:30	Anorexia, bulimia nervosa

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<i>Year</i>	<i>Author</i>	<i>Title</i>	<i>Publication</i>	<i>Topic</i>
2010	Persky S, Eccleston CP	Medical student bias and care recommendations for an obese versus non-obese virtual patient	International Journal of Obesity 35:728–735	Perception of obesity
2010	Gutiérrez-Maldonado J, Ferrer-García M, Caqueo-Úrizar A, Moreno E	Body image in eating disorders: the influence of exposure to virtual-reality environments	Cyberpsychology, Behavior, and Social Networking 13:521–531	Eating disorder, body image
2010	Ferrer-García M, Gutiérrez-Maldonado J	Effect of the mood produced by virtual reality exposure on body image disturbances	Annual Review of Cybertherapy and Telemedicine 154:44–49	Body image
2011	Riva G, Banos R, Botella C, Gaggioli A, Wiederhold BK	Personal health systems for mental health: the European projects	Studies in Health Technology and Informatics 18 163:496–502	Mental health
2011	Riva G	The key to unlocking the virtual body: virtual reality in the treatment of obesity and eating disorders	Journal of Diabetes Science and Technology 5:283–292	Eating disorder, obesity
2011	Coons MJ, Roehrig M, Spring B	The potential of virtual reality technologies to improve adherence to weight loss behaviors	Journal of Diabetes Science and Technology 5:340–344	Weight loss behavior
2011	Persky S	Application of virtual reality methods to obesity prevention and management research	Journal of Diabetes Science and Technology 5:333–339	Obesity
2011	Ruppert B	New directions in the use of virtual reality for food shopping: marketing and education perspectives	Journal of Diabetes Science and Technology 5:315–318	Diet and food/nutrient relationships
2011	Kahol K	Integrative gaming: a framework for sustainable game-based diabetes management	Journal of Diabetes Science and Technology 5:293–300	Obesity/diabetes management
2011	Morie JF, Chance E	Extending the reach of health care for obesity and diabetes using virtual worlds	Journal of Diabetes Science and Technology 5:272–276	Obesity, diabetes
2011	Bordnick PS, Carter BL, Traylor AC	What virtual reality research in addictions can tell us about the future of obesity assessment and treatment	Journal of Diabetes Science and Technology 5:265–271	Obesity assessment, eating behaviors
2011	Skip Rizzo A, Lange B, Suma EA, Bolas M	Virtual reality and interactive digital game technology: new tools to address obesity and diabetes	Journal of Diabetes Science and Technology 5:256–264	Obesity, diabetes
2011	Talbot TB	Virtual reality and interactive gaming technology for obese and diabetic children: is military medical technology applicable?	Journal of Diabetes Science and Technology 5:234–238	Child obesity, diabetes
2011	Ershow AG, Peterson CM, Riley WT, Rizzo AS, Wansink B	Virtual reality technologies for research and education in obesity and diabetes: research needs and opportunities	Journal of Diabetes Science and Technology 5:212–224	Obesity, diabetes
2011	Riva G, Wiederhold BK, Mantovani F, Gaggioli A	Interreality: the experiential use of technology in the treatment of obesity	Clinical Practice and Epidemiology in Mental Health 7:51–61	Obesity

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<i>Year</i>	<i>Author</i>	<i>Title</i>	<i>Publication</i>	<i>Topic</i>
2011	Straker LM, Campbell AC, Jensen LM, Metcalf DR, Smith AJ, Abbott RA, Pollock CM, Piek JP	Rationale, design and methods for a randomised and controlled trial of the impact of virtual reality games on motor competence, physical activity, and mental health in children with developmental coordination disorder	BMC Public Health 11:654	Child physical/mental health
2011	Ferrer-García M, Gutierrez-Maldonado J	Virtual reality exposure in patients with eating disorders: influence of symptom severity and presence	Annual Review of Cybertherapy and Telemedicine 167:80–85	Eating disorder
2012	Riva G, Cárdenas-López G, Duran X, Torres-Villalobos GM, Gaggioli A	Virtual reality in the treatment of body image disturbances after bariatric surgery: a clinical case	Annual Review of Cybertherapy and Telemedicine 181:278–282	Post-surgery body image disorder
2012	Ruiz JG, Andrade AD, Anam R, Aguiar R, Sun H, Roos BA	Using anthropomorphic avatars resembling sedentary older individuals as models to enhance self-efficacy and adherence to physical activity: psychophysiological correlates	Studies in Health Technology and Informatics 19 173:405–411	Physical activity
2012	Barros M, Neves A, Correia W, Soares M	Exergames: the role of ergonomics and design in helping to control childhood obesity through physical and functional exercise program	Work 41:1208–1211	Childhood obesity
2012	Ferrer-García M, Gutiérrez-Maldonado J	The use of virtual reality in the study, assessment, and treatment of body image in eating disorders and nonclinical samples: a review of the literature	Body Image 9:1–11	Eating disorders, body image
2012	Cardi V, Krug I, Perpiñá C, Mataix-Cols D, Roncero M, Treasure J	The use of a nonimmersive virtual reality programme in anorexia nervosa: a single case-report	European Eating Disorders Review 20:240–245	Anorexia nervosa
2012	Lewis TM, Aggarwal R, Kwasnicki RM, Rajaretnam N, Moorthy K, Ahmed A, Darzi A	Can virtual reality simulation be used for advanced bariatric surgical training?	Surgery 151:779–784	Bariatric Surgery
2012	Johnston JD, Massey AP, Marker-Hoffman RL	Using an alternate reality game to increase physical activity and decrease obesity risk of college students	Journal of Diabetes Science and Technology 6:828–838	Physical activity
2012	Johnston JD, Massey AP, Devaneaux CA	Innovation in weight loss programs: a 3-dimensional virtual-world approach	Journal of Medical Internet Research 14:e120	Weight loss
2012	Ferrer-García M, Gutiérrez-Maldonado J	The use of virtual reality in the treatment of eating disorders	Annual Review of Cybertherapy and Telemedicine 181:17–21	Eating disorder
2013	Ferrer-García M, Gutiérrez-Maldonado J, Pla J	Cue-elicited anxiety and craving for food using virtual reality scenarios	Annual Review of Cybertherapy and Telemedicine 191:105–109	Food cravings

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<i>Year</i>	<i>Author</i>	<i>Title</i>	<i>Publication</i>	<i>Topic</i>
2013	Riva G, Gaggioli A, Dakanalis A	From body dissatisfaction to obesity: how virtual reality may improve obesity prevention and treatment in adolescents	Studies in Health Technology and Informatics 20 184:356–362	Body dissatisfaction, obesity
2013	Koskina A, Campbell IC, Schmidt U	Exposure therapy in eating disorders revisited	Neuroscience and Biobehavioral Reviews 37:193–208	Eating disorder
2013	Sullivan DK, Goetz JR, Gibson CA, Washburn RA, Smith BK, Lee J, Gerald S, Fincham T, Donnelly JE	Improving weight maintenance using virtual reality (Second Life)	Journal of Nutrition Education and Behavior 45:264–268	Weight loss/maintenance
2013	Cesa GL, Manzoni GM, Bacchetta M, Castelnovo G, Conti S, Gaggioli A, Mantovani F, Molinari E, Cárdenas-López G, Riva G	Virtual reality for enhancing the cognitive behavioral treatment of obesity with binge eating disorder: randomized controlled study with one-year follow-up	Journal of Medical Internet Research 15:e113	Obesity, binge eating
2013	Perpiñá C, Roncero M, Fernández-Aranda F, Jiménez-Murcia S, Forcano L, Sánchez I	Clinical validation of a virtual environment for normalizing eating patterns in eating disorders	Comprehensive Psychiatry 54:680–686	Eating disorder
2013	Ledoux T, Nguyen AS, Bakos-Block C, Bordnick P	Using virtual reality to study food cravings	Appetite 71:396–402	Food cravings
2013	McBride CM, Persky S, Wagner LK, Faith MS, Ward DS	Effects of providing personalized feedback of child's obesity risk on mothers' food choices using a virtual reality buffet	International Journal of Obesity 37:1322–1327	Childhood obesity
2013	Marco JH, Perpiñá C, Botella C	Effectiveness of cognitive behavioral therapy supported by virtual reality in the treatment of body image in eating disorders: one year follow-up	Psychiatry Research 209:619–625	Body image
2013	Malbos E, Boyer L, Lançon C	[Virtual reality in the treatment of mental disorders]	La Presse Medicale 42:1442–1452	Mental disorders
2013	van den Akker K, Jansen A, Frentz F, Havermans RC	Impulsivity makes more susceptible to overeating after contextual appetitive conditioning	Appetite 70:73–80	Overeating
2013	Purvis CK, Jones M, Bailey J, Bailenson J, Taylor CB	Designing virtual environments to measure behavioral correlates of state-level body satisfaction	Annual Review of Cybertherapy and Telemedicine 191:168–172	Body satisfaction
2013	Ferrer-García M, Gutiérrez-Maldonado J, Pla J	Cue-elicited anxiety and craving for food using virtual reality scenarios	Annual Review of Cybertherapy and Telemedicine 191:105–109	Food cravings
2014	Cárdenas-López G, Torres-Villalobos G, Martinez P, Carreño V, Duran X, Dakanalis A, Gaggioli A, Riva G	Virtual reality for improving body image disorders and weight loss after gastric band surgery: a case series	Studies in Health Technology and Informatics 21 196:43–47	Post-surgery body image disorder
2014	Thomas JG, Bond DS	Review of innovations in digital health technology to promote weight control	Current Diabetes Reports 14:485	Behavioral weight control

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<i>Year</i>	<i>Author</i>	<i>Title</i>	<i>Publication</i>	<i>Topic</i>
2014	Astur RS, Carew AW, Deaton BE	Conditioned place preferences in humans using virtual reality	Behavioural Brain Research 267:173–177	Place preference, food reward
2014	Ferrer-Garcia M, Gutiérrez-Maldonado J, Pla J, Riva G, Andreu-Gracia A, Dakanalis A, Fernandez-Aranda F, Forcano L, Ribas-Sabaté J, Riesco N, Rus-Calafel M, Sánchez I, Sanchez-Planell L	Development of a VR application for binge eating treatment: identification of contexts and cues related to bingeing behavior in Spanish Italian patients	Annual Review of Cybertherapy and Telemedicine 199:71–75	Binge eating
2014	Ferrer-Garcia M, Gutiérrez-Maldonado J, Agliaro-López M, Lobera-Espi X, Pla J, Vilalta-Abella F	Validation of VR-based software for binge eating treatment: preliminary data	Annual Review of Cybertherapy and Telemedicine 199:146–150	Binge eating
2015	Bouhlal S, McBride CM, Ward DS, Persky S	Drivers of overweight mothers' food choice behaviors depend on child gender	Appetite 84:154–160	Obesity—food choice behaviors
2015	Persky S, McBride CM, Faith MS, Wagner LK, Ward DS	Mothers' guilt responses to children's obesity risk feedback	Journal of Health Psychology 20:649–658	Obesity risk feedback
2015	Astur RS, Palmisano AN, Hudd EC, Carew AW, Deaton BE, Kuhney FS, Niezrecki RN, Santos M	Paylovian conditioning to food reward as a function of eating disorder risk	Behavioural Brain Research 291:277–282	Eating disorders, food reward
2015	Ferrer-Garcia M, Gutierrez-Maldonado J, Treasure J, Vilalta-Abella F	Craving for food in virtual reality scenarios in non-clinical sample: analysis of its relationship with body mass index and eating disorder symptoms	European Eating Disorders Review 23:371–378	Eating disorders, BMI

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