

## Virtual Reality Technologies for Research and Education in Obesity and Diabetes: Research Needs and Opportunities

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### Abstract

The rising rates, high prevalence, and adverse consequences of obesity and diabetes call for new approaches to the complex behaviors needed to prevent and manage these conditions. Virtual reality (VR) technologies, which provide controllable, multisensory, interactive three-dimensional (3D) stimulus environments, are a potentially valuable means of engaging patients in interventions that foster more healthful eating and physical activity patterns. Furthermore, the capacity of VR technologies to motivate, record, and measure human performance represents a novel and useful modality for conducting research. This article summarizes background information and discussions for a joint July 2010 National Institutes of Health – Department of Defense workshop entitled *Virtual Reality Technologies for Research and Education in Obesity and Diabetes*. The workshop explored the research potential of VR technologies as tools for behavioral and neuroscience studies in diabetes and obesity, and the practical potential of VR in fostering more effective utilization of diabetes- and obesity-related nutrition and lifestyle information.

Virtual reality technologies were considered especially relevant for fostering desirable health-related behaviors through motivational reinforcement, personalized teaching approaches, and social networking. Virtual reality might also be a means of extending the availability and capacity of health care providers. Progress in the field will be enhanced by further developing available platforms and taking advantage of VR's capabilities as a research tool for well-designed hypothesis-testing behavioral science. Multidisciplinary collaborations are needed between the technology industry and academia, and among researchers in biomedical, behavioral, pedagogical, and computer science disciplines. Research priorities and funding opportunities for use of VR to improve prevention and management of obesity and diabetes can be found at agency websites (National Institutes of Health: <http://grants.nih.gov/grants/guide/index.html>; Department of Defense: [www.tatrc.org](http://www.tatrc.org)).

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**Abbreviations:** (3D) three-dimensional, (BMI) body mass index, (HMD) head-mounted display, (SOC) standard of care, (VE) virtual environment, (VR) virtual reality

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