

news release

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Nine Leading Research Teams Selected to Study How Digital Games Improve Players' Health

Researchers seek to discover how interactive video games can be designed to improve physical activity, prevention behaviors and self-management of chronic conditions

Princeton, NJ // November 5, 2009 // The Robert Wood Johnson Foundation (RWJF) today announced more than \$1.85 million in grants for research that will offer unprecedented insight into how digital games can improve players' health behaviors and outcomes. With funding from RWJF's *Health Games Research* national program, nine research teams across the country will conduct extensive studies to discover, for example, how the popular dance pad video game Dance Dance Revolution might help Parkinson's patients reduce the risk of falling, how Wii Active might be most effectively implemented in high schools to help overweight students lose weight, how a mobile phone game with a breath interface might help smokers quit or reduce their tobacco use, or how facial recognition games might be designed to help people with autism learn to identify others' emotions.

Health Games Research is supported by an \$8.25 million grant from RWJF's Pioneer Portfolio, which funds innovative projects that may lead to breakthrough improvements in the future of health and health care. The national program, which conducts, supports, and disseminates research to improve the quality and impact of health games, is headquartered at the University of California, Santa Barbara. It is directed by Debra Lieberman, Ph.D., communication researcher in the university's Institute for Social, Behavioral, and Economic Research and a leading expert in the research and design of interactive media for learning and health behavior change. The grants were awarded under the program's second funding round to strengthen the evidence base in this emerging field.

"Digital games are interactive and experiential, and so they can engage people in powerful ways to enhance learning and health behavior change, especially when they are designed on the basis of well-researched strategies," said Lieberman. "The studies funded by *Health Games Research* will provide cutting-edge, evidence-based strategies that designers will be able to use in the future to make their health games more effective."

The nine research teams, chosen from among 185 proposals, each have been awarded between \$100,000 and \$300,000 to lead one- to two-year studies of digital games that engage players in physical activity and/or motivate them to improve how they take care of themselves through healthy changes in lifestyle; prevention behaviors; cognitive, social or physical skills; chronic disease self-management; and/or adherence to a medical treatment plan. Studies will focus on diverse population groups that vary by race and ethnicity, health status, income level, and game-play setting, with age groups ranging from elementary school children to 80-year-olds. The research teams will study participants' responses to health games played on a variety of platforms, such as video game consoles, computers, mobile phones and robots.

“The pace of growth and innovation in digital games is incredible, and we see tremendous potential to design them to help people stay healthy or manage chronic conditions like diabetes or Parkinson’s disease. However, we need to know more about what works and what does not—and why,” said Paul Tarini, team director for RWJF’s Pioneer Portfolio. “*Health Games Research* is a major investment to build a research base for this dynamic young field. Further, the insights and ideas that flow from this work will help us continue to expand our imagination of what is possible in this arena.”

The nine grant recipients are:

Children's Hospital of Philadelphia (Philadelphia, PA) *Reward Circuitry, Autism and Games that Teach Social Perceptual Skills*—tests effects of facial perception games on the brain activity and facial perception skills of 8- to 12-year-old children who have been diagnosed with an autism spectrum disorder (ASD). Children with ASD tend to have difficulty perceiving and interpreting facial expressions and recognizing a person’s identity by observing their face. The games used in the study challenge them to notice subtle differences in faces and expressions and give them opportunities to rehearse these skills and receive feedback on their performance. Behavioral testing and use of functional Magnetic Resonance Imaging (fMRI) of players’ brains before and after playing the games for 50 hours over the course of eight weeks will help the researchers determine how the games influence facial perception skills and how the brain changes in response to these game experiences.

George Washington University (Washington, DC) *Active-Adventure: Investigating a Novel Exergaming Genre in Inner City School Physical Education Programs*—compares physical, psychological and behavioral effects of three activities: (1) playing Winds of Orbis, a video game that involves an upper and lower body workout as the player moves in order to control a character’s movements in the game; (2) playing Dance Dance Revolution, a popular video game that provides a lower body workout as players dance on a pad that detects their dance steps; and (3) engaging in traditional physical education activities at school. Study participants are inner-city African-American and Hispanic students from grades 1-8 who are randomly assigned to the three groups. The study examines various outcomes such as their enjoyment of the activities, attitudes toward physical activity, amount of exercise and number of calories burned.

Georgetown University (Washington, DC) *Wii Active Exergame Intervention for Low-Income African-American Obese and Overweight Adolescents*—assigns obese and overweight urban high school students to (1) play the Wii Active competitively after school with the goal of lowering their body mass index (BMI), (2) play the Wii Active cooperatively in a team after school with the goal of helping each other reduce their BMI, or (3) play with no access to Wii Active after school (control condition). The seven-month field experiment examines physiological, social and cognitive outcomes of participants in all three groups to determine whether those who play Wii Active are more physically active; lose more weight; develop greater self-esteem; have more friends; and have better memory, attention and other cognitive skills than those assigned to the control group. The study also examines whether competitive or cooperative game play influences these outcomes the most.

Long Island University (Brooklyn, NY) *Dance Video Game Training and Falling in Parkinson’s Disease*—compares the use of a commercially available dance pad video game, Dance Dance Revolution, to two traditional treatment options that help people with Parkinson’s Disease reduce their risk of falling by increasing their balance, strength, endurance, motor coordination and visual-motor integration. The two traditional treatments are rhythmic stepping and treadmill training with music. The researchers assess balance, motor function, reaction time and self-confidence to evaluate the game in comparison to the two traditional treatments. They also use functional Magnetic Resonance Imaging (fMRI) to observe participants’ brain activity.

Michigan State University (East Lansing, MI) *Buddy Up! Harnessing Group Dynamics to Boost Motivation to Exercise.* Research has found that people will work harder with a partner in a strenuous physical task than when working alone, especially if the partner is moderately better at the task. This study provides a virtual partner that engages in exercises with participants on the Eye Toy: Kinetic camera-based video game. College-age study participants are randomly assigned to engage in EyeToy: Kinetic exercises either with a virtual partner or alone. Characteristics of the partner are varied to see which are most effective at improving endurance and exercise time.

Michigan State University (East Lansing, MI) *Short-Term and Long-Term Effectiveness of Exergames for Young Adults*—investigates effects of the Mount Olympus game, a 3D fantasy role-playing game that requires players to move their upper and lower body in order to control their character's movements throughout the world of the game. Overweight and inactive college students participate in the study, which randomly assigns them either to play Mount Olympus or to use a motivational Web site designed to promote and support physical activity. The study examines the extent to which each media activity meets individuals' needs for competence, autonomy and social relatedness, and how meeting these needs may motivate engagement in the activity. More engagement is expected to lead to more physical activity in daily life and therefore to more weight loss and better health outcomes.

Teachers College, Columbia University (New York, NY) *Lit: A Game Intervention for Nicotine Smokers*—develops and evaluates a smoking reduction game delivered on a mobile phone. The game is intended to be an alternative to smoking with the goal of reducing or eliminating tobacco use in players' lives. The game involves breathing into a microphone to control gameplay and is coupled with sound, color, images, challenges and feedback to mimic the stimulant and relaxant effects of smoking. Effects will be evaluated through emotional response and physiological measures (electroencephalogram (EEG), heart rate, galvanic skin response) and compared to subjects after smoking or after playing the game in lieu of smoking. If successful, the game will emulate the effects of smoking as a replacement therapy for smokers who want to quit.

University of California, San Francisco (San Francisco, CA) *A Video Game to Enhance Cognitive Health in Older Adults.* As people age, they lose some of their ability to sustain their attention and to focus their attention on their main task while ignoring distractions. This study aims to improve these and other related cognitive skills by using a driving game in which players practice paying attention to relevant information, such as traffic signs, and ignoring irrelevant information, such as billboards. The study monitors brain activity with electroencephalogram (EEG) recordings and observes eye position and game performance in younger adults (ages 18 to 30) and older adults (ages 60 to 80) before and after six weeks of game play. The study assesses changes in cognitive ability, brain activity and transfer of game-related skills to similar cognitive operations and activities that take place in daily life.

University of Southern California (Los Angeles, CA) *Robot Motivator: Towards Adaptive Health Games for Productive Long-Term Interaction* — examines the influence of virtual social characters on people's motivation to exercise. Study participants ages 60 and older are randomly assigned to exercise by following the lead of either (1) an embodied character, which is a human-looking robot that demonstrates exercises right there in the room with them or (2) an animated presentation of the same robot on a television screen. The study investigates the role of physical embodiment and social presence on participants' motivation to engage and persist in exercise and physical activity.

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EDITOR'S NOTE: A streaming audio replay of the Health Games Research telenews event held today will be available on the Web at <http://www.healthgamesresearch.org> as of 7 p.m. EDT.

About the Robert Wood Johnson Foundation and the Pioneer Portfolio

The Robert Wood Johnson Foundation focuses on the pressing health and health care issues facing our country. As the nation's largest philanthropy devoted exclusively to improving the health and health care of all Americans, the Foundation works with a diverse group of organizations and individuals to identify solutions and achieve comprehensive, meaningful and timely change. The Foundation's Pioneer Portfolio supports innovative ideas and projects that may lead to important breakthroughs in health and health care. Projects in the Pioneer Portfolio are future-oriented and look beyond conventional thinking to explore solutions at the cutting edge of health and health care. When it comes to helping Americans lead healthier lives and get the care they need, the Foundation expects to make a difference in your lifetime. For more information, visit www.rwjf.org/pioneer.

About the University of California, Santa Barbara

The University of California, Santa Barbara (UCSB) is one of 10 universities in the University of California system, and is one of only 62 research-intensive institutions elected to membership in the prestigious Association of American Universities. The distinguished 1,128-member faculty includes five Nobel Prize winners and scores of elected members or fellows of elite national academies and associations. The campus is also home to 11 national centers and institutes, eight of them sponsored by the National Science Foundation. *U.S. News and World Report's* guide, "America's Best Colleges," ranks UCSB number 11 among all public universities in the nation. For more information, visit www.ucsb.edu.

UCSB's Institute for Social, Behavioral, and Economic Research (ISBER) brings together researchers from many academic disciplines in order to foster collaboration and span the boundaries between the social and behavioral sciences, the humanities, and the physical and biological sciences. For more information, visit www.isber.ucsb.edu.

The *Health Games Research* national program at UCSB conducts, supports, and disseminates research to enhance the quality and impact of interactive games used to improve health. For more information, visit www.healthgamesresearch.org or contact the program at healthgamesresearch@isber.ucsb.edu.

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