Chapter 14
Pervasive Health Games

Martin Knöll
University of Stuttgart, Germany

ABSTRACT

Prevention and therapy of emerging lifestyle diseases are strongly linked to daily behavior, physical activity, and knowledge of healthy life. The potentials of serious game applications in a health context for user's motivation, education, and therapy compliance is investigated and so far widely accepted. Pervasive Health Games (PHGs) combine pervasive computing technologies with serious game design strategies, in order to unfold user's playground to the city and therefore to their everyday life. The following article presents the typology of PHG within Games for Health as an interdisciplinary working field consisting of health care, psychology, game design, sports science, and urban research. A brief introduction to the theme is illustrated with a conceptual "showcase," a pervasive game concept for young diabetics.

URBANISM AND HEALTH

The relationship between healthy living and the city is a "critical one." Since the 19th Century, "urban city life" has been considered as a primary cause for various epidemical outbreaks of diseases. Cholera, typhus, tuberculosis, and "infectious fevers" had been closely linked to the massive growth of population and the "insanitary" conditions in urban living areas of the industrialized city. Various political parties used the "picture of the unhealthy city" as an instrument in the health discussion in order advocate their own differing interests (Rodenstein, 1988, p. 81).

In September 2006, the New York Times featured an article series called "Bad Blood," headlining that one of eight adult persons in New York City has diabetes (Santora, 2006). Authors brought up the word of a "social epidemic" referring to the fact that

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the diabetes type 2 epidemic is not only caused by a genetically disposition but by a certain lifestyle. Modern "lifestyle diseases" affect all social milieus, but especially the socially deprived. The western way of life, such as physical inactivity, stress, and an unhealthy diet, takes place in the city and as shown in the case of New York City, is adopted in cities by millions of immigrants every year.

The *19th century picture* of the "unhealthy city" influenced modern town planning mainly in two ways. On the one hand the emerging hygiene and sanitary movement transferred the health discourse from a social to an engineer terrain. Within the political philosophy of the time, any problematic symptom of the industrial city would be addressed by technical progress. Hygiene and public health policies therefore midwifed the "scientific" carrier of the discipline of modern town planning (Benevolo, 1967, p. 32). On the other hand most of the modern Avant-garde architects of the early 20th century responded to this picture with an explicit "anti-urban" idea of healthy living, which still effects contemporary urban designs (c.f. Fehl & Rodriguez-Lores, 1997, p. 51).[1] To put it in a nutshell, current health issues are fundamentally interwoven with both - spatial *and* social aspects of city life. Their epicenters are situated in the post-urban megapolises. Facing the big challenges of modern lifestyle diseases such as obesity, type 2 diabetes or chronic heart diseases, health orientated urban research must focus on urban lifestyle, rather than merely investigating, analyzing and influencing the built environment. Seen as a research *and* design discipline, urban planning cannot be seen anymore as restricted to the production of buildings, streets, and parks. With the references *cybernetics, pervasiveness,* and *game* urban planning must face a postmodern, computer-assisted of health promoting systems. In subsequent chapters, the author would therefore discuss possibilities to *re-use* rather than to rebuild cities within the health context.

SERIOUS GAMES ARE ABOUT TO LEAVE THEIR ELECTRONIC SHELLS...

In order to develop mechanism and strategies to re-use our cities, the cultural technique of serious games comes into play. The "Serious Games Initiative" founded by the Woodrow Wilson International Centre for Scholars has defined the term "serious game" as "digital games with non-entertainment purposes such as health care, security, management or learning" in 2002. Since 2004 the sub-group "Games for Health" focuses on "the impact games and game technologies can have on health care and policy" ("Games for Health - About," n.d., Welcome section). [2] Current trends include video games for rehabilitation and therapy issues and the emerging field of "Exergaming," motivating players for more physical activity.

Considering the increase of chronic diseases and prevention projects, we seek for game design strategies, which integrate the game play into the everyday life of its players. A new generation of computer games, called "Serious Pervasive Games" therefore overlay the physical space with a virtual game zone. According to Borries, Walz, & Böttger, (2006):

"They [pervasive games] not only serve as a new type of gaming, but also as a new form of using and experiencing the city. In pervasive games, the city transforms into a playground that can be played every time and everywhere. And this functional assignment does not depend any longer on the building structures but on the available technology." (Borries, Walz, & Böttger, 2006, p. 41)

Several prototypes for Serious Pervasive Games (SPGs) have been developed in the fields of health care, security, tourism, management, or learning in the last ten years.[3]

One of the first pervasive projects that focus on "the relationship between art, technology