

DEVELOPMENT OF A SOCIAL INCLUSIVE IMMERSIVE VIRTUAL REALITY EXERGAME TO PROMOTE PHYSICAL ACTIVITY

Abdul Hannan Bin Zulkarnain¹, Alin Totorean², Attila Gere¹, Eduardo Cruz³, Brian Horsak⁴, Linda Lancere⁵, Lucas Schoeffer⁴, Mark Simonlehner⁴, Mihaela Crişan-Vida², Rita Fernandes³, Yasmine Sterckx⁶

¹Hungarian University of Agriculture and Life Sciences, Budapest, Hungary

²Politehnica University Timisoara, Timisoara, Romania

³Polytechnic Institute of Setúbal, Setúbal, Portugal

⁴St. Pölten University of Applied Sciences, St. Pölten, Austria

⁵Vidzeme University of Applied Sciences, Valmiera, Latvia

⁶UC Leuven-Limburg University of Applied Sciences, Genk, Belgium

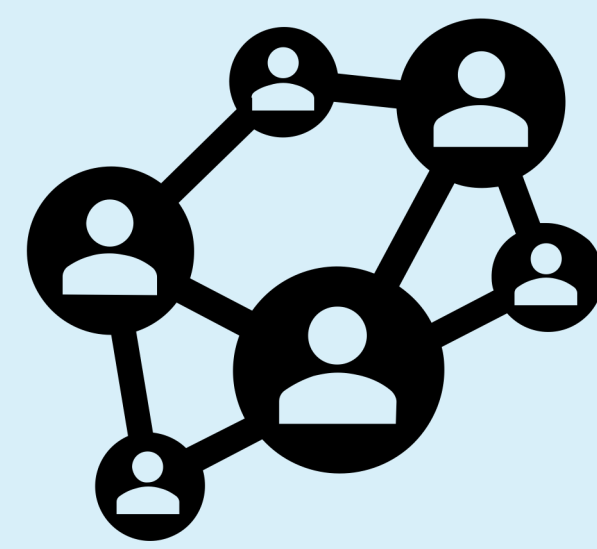
To whom correspondence should be sent: gere.attila@uni-mate.hu

WHAT'S NEW!



Virtual Reality (VR) platform provides the unique and holistic approach to the physical and mental aspects possible to realize in remote conditions.

Existing solutions of VR for physical activities is not providing element of socializing during the physical remote exercises as socializing is a significant element for human well-being.

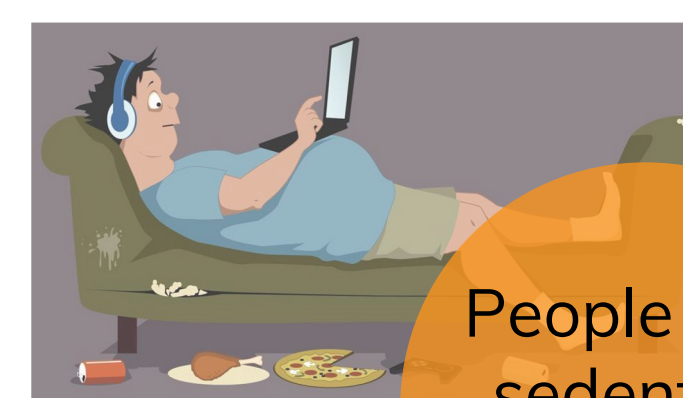


BACKGROUND & AIM

Level of physical activities is directly linked to health conditions, well being of persons and labor productivity. Physical inactivity particularly is threat during pandemic COVID19 conditions (limited opportunity to go to gym, rehabilitation centers, long waiting times to specialists) and as well as for people who are living in sparsely populated areas.

The offered solution focuses on the prevention of the above stated medical and mental conditions by means of VR platform to increase physical activity level and to increase socialization in the population with sedentary lifestyle.

Target Group:



People with
sedentary
lifestyle.

Main Aim:



To increase the physical
activity levels.

Objective:

To develop a socially inclusive VR solution for patients with sedentary lifestyle which allows them to perform individualized physical exercises in line with clinical guidelines.

METHODOLOGY

The social inclusive virtual reality exergame (sVREx) had been developed at the St. Pölten University of Applied Sciences in Austria. The platforms build upon the game engine Unity where scripts are written in C#. Unity is one of the most powerful game engines for developing games and offers support for various platforms (Android, iOS, Windows, and Mac).

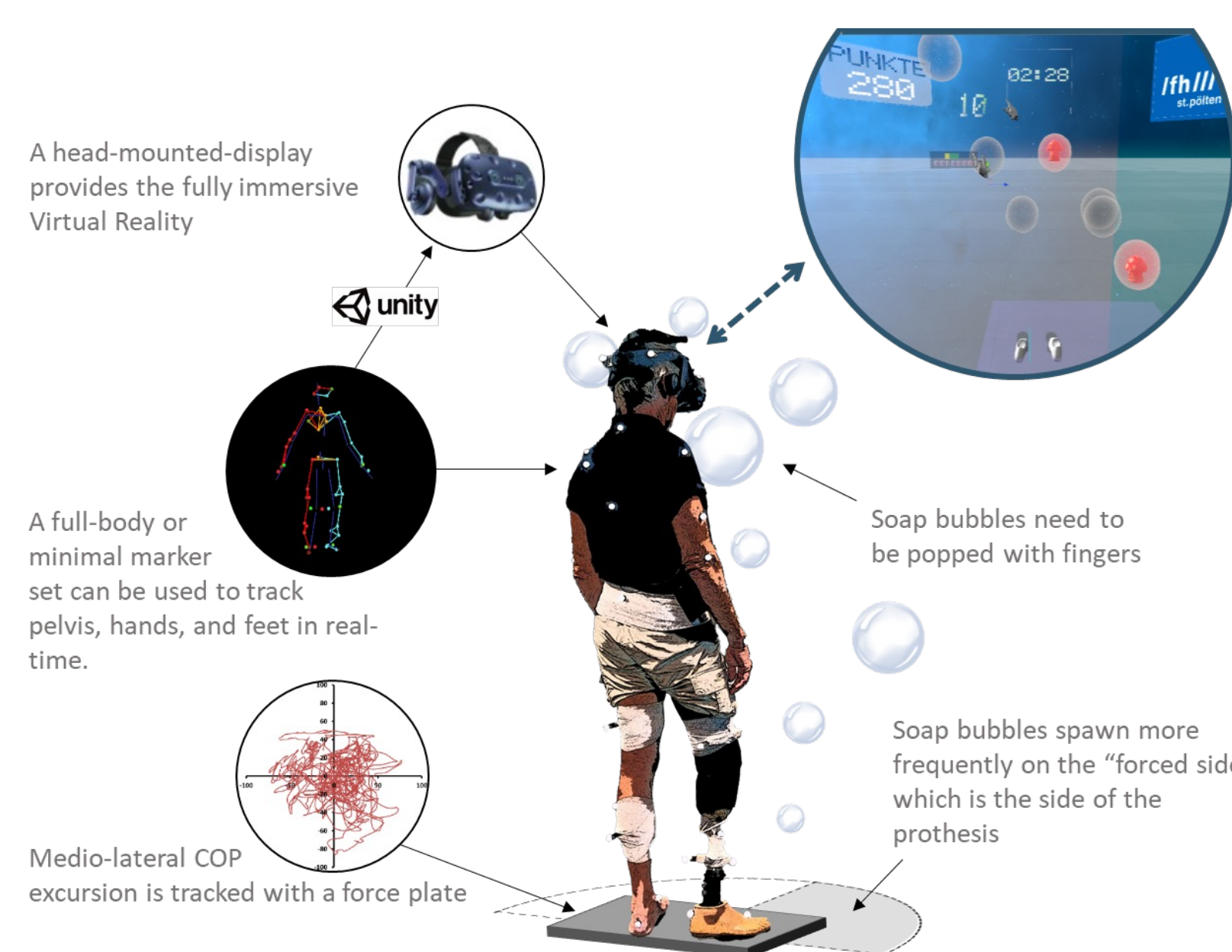


Figure 1: Prototype of the VR exergaming platform developed in a currently running research project at the St. Pölten UAS.

RESULTS

The sVREx game had been developed based on an immersive biomechanical VR exergaming platform.

The prototype allows to play three different low-level prototype exergames.



Figure 2: Example of the demonstration of the VR exergaming platform.

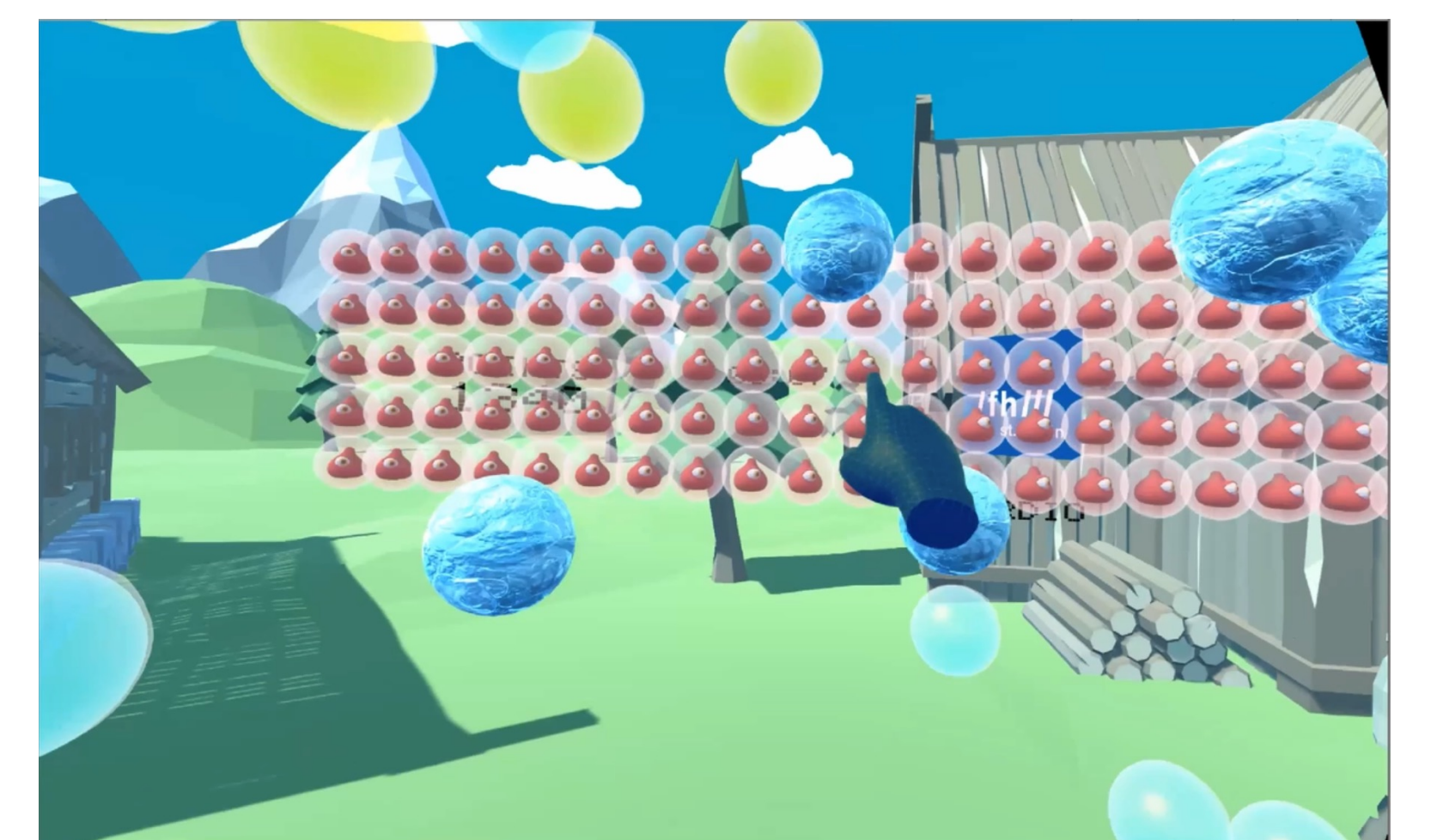
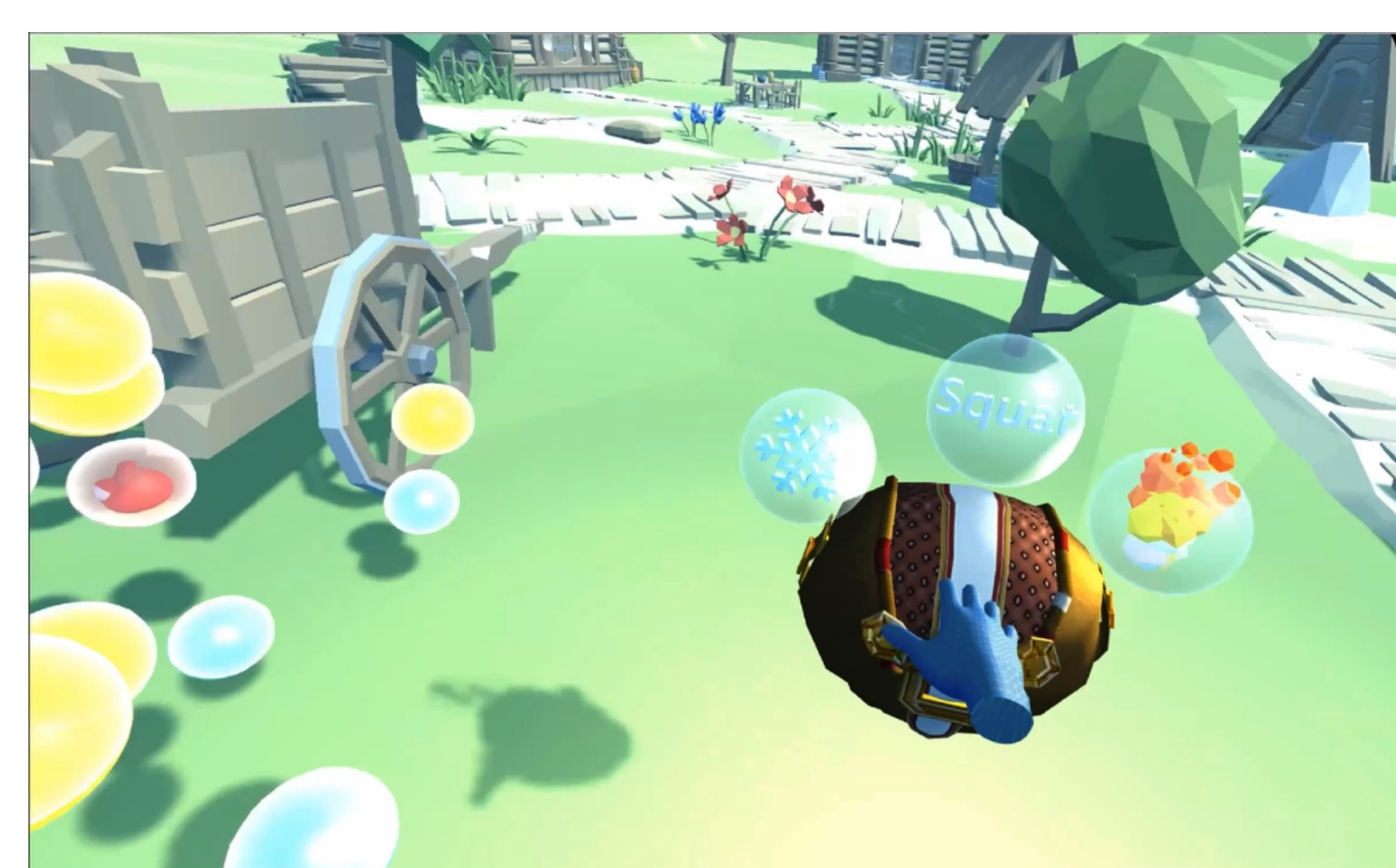


Figure 3: Prototype of the developed VR exergaming platform with different physical activity: (1) cardio, (2) strength and (3) squat.

CONCLUSION & FUTURE RESEARCH

The proposed project involves 6 European countries providing a unique perspective on well-being and digital tool acceptance across the whole Europe reinforcing the national government efforts to improve the well-being of the society. This is an innovative technological platform providing holistic approach for the citizens – from the physical and mental perspectives based on objective wearable sensor real-time data.