

Why not combine the advantages of telecommunication technology in bridging distance, and those of sports in facilitating social introductions and fun?

Exertion Interfaces are a new kind of interfaces that facilitate what can be described as "Sports over a Distance." These interfaces make you tired and sweaty, but also support you in bringing you closer to old friends and help you making new ones. So instead of creating technology that helps you being more productive and work more efficient, this design supports you in making more friends and fights boredom. Welcome to a new future of technology that is fun!

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Asserting that sports and games have these socializing effects, a game environment can be a valuable augmentation of what current telecollaboration tools try to accomplish in terms of social interaction. If physical exertion can put the user in a heightened state of arousal that supports bonding, it makes sense to leverage the same kind of arousal in a distributed setting. For example, if strangers meet over a networked environment for the first time, a game can break the ice, as it provides rules to follow, an activity or experience to share, and something to talk about.

In order to test our hypothesis, we used these findings to develop a system which allows two players in remote locations to play sports together. As an example of an Exertion Interface, it requires physical effort to play and encourages mastering specific skills. Furthermore, the design aims to make it fun to play and also to support interactions between the players.



## Video

The Breakout for Two video can also be downloaded (320x240, 25fps, 300kbps, CBR). A DVD quality version is also available (768x576, 25fps, 1Mbps, VBR).

### Streaming

(300 kbps)  
(10 MB)  
(40 MB)

Download (right-click)  
DVD quality (right-click)

Real



[Breakout for Two](#)



[breakout.rm](#)



[breakout\\_dvdquality.rmvb](#)

Windows



[Breakout for Two](#)



[breakout.wmv](#)



[breakout\\_dvdquality.wmv](#)

Quicktime



[Breakout for Two](#)



[breakout.mov](#)



[breakout\\_dvdquality.mov](#)

## First prototype

The first prototype of Breakout for Two is also documented in a video:



[breakout\\_first\\_prototype.mov](#) (Quicktime, 7 MB)

## Old Webpage

The old webpage of the Breakout for Two is at:

<http://exertioninterfaces.com>

## Publications

Mueller, F. & Agamanolis, S. (2009) **Interaction Design in Sports**. In *Design for Sport* book. To appear 2009.

Mueller, F. & Berthouze, N. (2009) **Evaluating Exertion Games - Experiences from Investigating Movement-Based Games**. In Bernhaupt, R. (Ed.) *Evaluating User Experiences in Games*. To appear 2009.






Mueller, F., (2008) **Long-distance sports**, in *Computers in Sports* book, Dabnichki, P., Baca, A. (eds.), WIT Press, UK.

Virtual Reality and Broadband (2008), **The Design of Networked Exertion Games**. Journal of  
Mueller, F., Agamanolis, S. **Exertion Interfaces**. Workshop Organizers. CHI '08.  
Mueller, F., Agamanolis, S. **Exertion Interfaces**. Workshop Organizers. CHI '07.  
Frank, B., Ries, P., Wenzel, G., Bittner, G., and S. D. **Enriched Physical Activity**, in [Computer  
Games - Proceedings of the 2007 Workshop on Games \(over a Distance\) Playing Together Although Apart Using Games -  
Applied Research in Computer Based Applications](#), Springer, Vol. (2007), **Sports over a Distance**. *J  
Publications* (2008), **Design of Exertion Games for the Networked Exertion**.  
Mueller, F., Agamanolis, S. (2005) **Sports over a Distance**. *ACM Journal: Computers*, July 2005  
Mueller, F., (2005) **Exertion Interfaces: Sports over a Distance for Social Bonding and**  
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Exertion Interfaces evolved out of a thesis in Media Arts and Sciences at the Massachusetts Institute of Technology, MIT Media Lab, and was carried out at Media Lab Europe, MIT Media Lab's European Research Partner.

Exertion Interfaces led to a thesis in Media, Arts, and Sciences at the MIT Media Lab, Cambridge, USA. It got rewarded an A+. Thesis supervisors were Rosalind W. Picard, Associate Professor of Media Arts and Sciences, MIT Media Lab, and Stefan Agamanolis, Principal Research Scientist, Media Lab Europe. Thesis reader was Ted Selker, Associate Professor MIT Media Lab.

The thesis (158 pages) is available in three different resolutions:

-  [thesis florian mueller screen.pdf](#) (PDF, 7 MB, for onscreen viewing)
-  [thesis florian mueller ebook.pdf](#) (PDF, 9 MB, e-book format for PDAs)
-  [thesis florian mueller print.pdf](#) (PDF, 21 MB, for printing)