Remote Impact -
Shadowboxing over a Distance

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EXECUTIVE SUMMARY

Remote Impact is a boxing-like "Sports over a Distance" game that requires intense brute force from geographically distant competitors, contributing to fitness and stress relief while supporting social bonding and fun.

1. REMOTE IMPACT

Remote Impact is a "Brute Force" exertion [Mueller et al. 2003] game that supports two participants, located in two geographically different locations. It encourages intense physical activity using the entire body and aims to offer physical health benefits previously limited to traditional contact sports. Unlike conventional computer games and even the Nintendo Wii, which only supports hitting thin air, Remote Impact recognizes and registers intense brute force. Remote Impact aims to address the increasing obesity epidemic by offering sports activities to remote family members and friends. It aims to facilitate the bonding and teambuilding benefits for users who cannot participate in traditional sports together because they live apart.

2. GAMEPLAY

The gameplay of "Remote Impact" is as follows: The two remote players enter the identical interaction spaces. They are facing a sensitive playing wall, on which the shadow of the remote person is projected. Their own shadow is also displayed, in a different shade of grey. These shadows appear to be created by a light source behind the players, i.e. if the players get closer to the interaction wall, their shadows increase in size. If the players face the interaction surface, it appears as if the other person is standing next to them, because the shadows show the silhouettes of two people. The players can also talk to and hear each other through a voice connection between the locations. Once the game starts, both players try to execute an impact on each other's shadow. Players can punch, kick, or throw their entire bodies against their projected opponent, and the system recognizes when there has been a hit or a miss. Players can dodge hits by ducking or moving out of the way, just as in traditional combat sports. More points are scored by hitting the opponent harder. Players can execute very strong hits, and punch in quick succession to release stress and achieve an intense workout. At the same time, their reaction time and agility are trained by dodging the other player. Strategy is important to have a balanced offense/defense approach to score the most points and win the game.

3. CONTRIBUTION

Remote Impact presents a novel interaction approach to exertion gaming because of four factors:

1. Remote Impact supports Brute Force to encourage intense

exertion. Traditional exertion games such as the Wii have been praised for their potential to support energy expenditure and contribute to weight loss, however, physiological measures have shown that their effectiveness is rather limited, for example the exercise can be compared with a brisk walk, not a sports experience [Graves et al. 2007]. Remote Impact has been described by one of our participants as "more exhausting than the hour of squash" he played beforehand.

2. Remote Impact supports remote participants via distributed gameplay, allowing two geographically distant friends or family members to enjoy a "together" experience, in contrast to a non-interactive sports [Vossen 2004] such as jogging with the Nike+iPod system where runners jog independently and interact only after the exercise.

3. Remote Impact employs a novel full-size videoconferencing display that allows a simulated close-proximity interaction without camera obstruction or distortion issues in contrast to conventional videoconferencing systems. Traditionally, video interactions between remote users assume the actors stay a certain distance away from the projection screen to be in the cone-shape capturing area of the video camera or in fact any lens-based system. Our system supports body-to-body interactions where the user can, and is encouraged to, come as close as possible to the other person i.e. their representation.

4. Remote Impact introduces a novel multi-touch detection system for large textile surfaces that can measure location as well as intensity while being unaffected by intense physical abuse. This new technology allows for direct physical gameplay with remote participants: the interaction wall is input and output device simultaneously, in contrast to, for example the Eyetoy interaction, in which the game activity is physically disparate from the visualization screen. This direct interaction has been shown to provide benefits to the users' experience [Forlines et al. 2007], in particular if bimanual interactions that support the use of both hands are facilitated, such as kicking and punching.

4. REFERENCES

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