A Study of Employees’ Acceptance of Using Exergames for Corporate Wellness: GamePlay Implications for Psychosocial Well-being, Communication and Productivity?

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25 August 2016
A Study of Employees’ Acceptance of Using Exergames for Corporate Wellness

Outline

1. Introduction
2. Background & Motivation: Selected Studies on VETS: Measurements and Analytics
3. Pilot Study: Exergames for Corporate Wellness
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5. Concluding Remarks
1. Introduction
1. Introduction: Non-Communicable Diseases: A Global Problem

- Over 75% of worldwide (and Singapore) deaths are due to non-communicable diseases (NCDs).

- Healthy diet & adequate physical activity play an important role to prevent NCDs

Proportional mortality (% of total deaths, all ages, both sexes)

Singapore Mortality Data (From WHO NCD Country Profiles 2014)

Total Workforce: 3.44 millions
(Data from MOM Labour Force in Singapore Report 2013, Page 2)
The idea of exergaming was first introduced in 1980s when Nintendo’s PowerPad was released, which combines “exercise” and “gaming” to represent the trend of using consumer digital games in an exercise activity (Sinclair et al., 2007).

Nintendo Wii and Microsoft Xbox 360 Kinect, which are two digital game consoles designed to track bodily motions during game play and provide both fun and exercise for the game players.

1.1 Related Studies: Digital Game Devices & Exergaming


1.2 Related Studies: Physiological Impact of Exergaming

- ACSM recommends that every adult should have at least 30 minutes per day of moderate intensity activity and 150 minutes of exercises per week, (Haskell & Lee et al., 2007).
- It is recommended that moderate intensity of exercise should be emphasized for older adults to maintain good health status and provide sufficient workout for their body (Mazzeo, 1998).
- Regular exercises performed at low to moderate intensity reduce risk factors associated with cardiovascular disease (Mazzeo & Tanaka, 2001).
- The Wii system may provide some physiological therapeutic benefit to older adult players because it requires low-load, self-paced active movement of the shoulder, arm, and hand, usually within a small arc of movement, and can be done.

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1.2 Related Studies: Physiological Impact of Exergaming

- Studies on the human factors in computer systems have shown that full-body motion-based games have positive effect on elderly mood and their emotional well-being (Gerling et al, 2012).

- Exergaming has been used as a leverage to convince users to pay attention to information they would otherwise ignore, and communication and interaction with the game system was then used to change attitudes and behaviours of people (Fogg, 2002).

- As such, it might encourage elderly to engage in more physical activities and attain positive status of mental and social health (Theng et.al, 2009).


Tuesday, 7 May, 13
1.3 Research Motivation: Exergames for Corporate Wellness?
2. Background & Motivation: Several Studies on Elderly and Exergames – Measurements & Analytics
Project:
Virtual Exercise Therapist Systems (VETS) Towards Exercise, Well-Being & Wellness

ALL-AGES DIGITALLY MEDIATED GAME for FITNESS, FUN and FRIENDSHIP

What is Happening?

The world population is growing rapidly. Worldwide, governments in countries realize that for elderly users to remain an active part of society, efforts have to be undertaken to ensure active aging. It is recognized that active aging leading to social integration and healthy living among elderly users is dependent on two major health behaviors: regular exercise and healthy consumption.

In this project, we propose that interactive Digital Technology offers a number of possible approaches to exercise, healthy food consumption and social interaction. We will develop a digital fitness program utilizing the Nintendo Wii, in promoting regular exercise and healthy food consumption among elderly users in Singapore (aged 65 years and above). We will extend its purpose for intergenerational gaming among elderly and young users, and aim to design, develop and evaluate a game prototype called A2GameF3 (All-Age Digitally Mediated Game for Fitness, Fun and Friendship).

For more information on the project and research team, please visit http://www.a2gamef3.com or email us at contact[a]a2gamef3.com
Virtual Exercise Therapist System (VETS)

Overview
- The Virtual Exercise Therapist System (VETS) prototype is being designed and developed with motion sensors to encourage individuals to exercise through game play. To develop interactive exergames and exercise regimes that are deployable in various settings (elderly / workplace / rehabilitation).

Novelties
- Physical activity monitoring with fitness analytics (Range of Motion, Energy Expenditure, Steps, etc.)
- Customized exergames for common exercises activities
Virtual Exercise Therapist System (VETS)

With motion capture capability, the VETS system prototype to record players’ movements and incorporate these raw data into centralized database.

We will focus on developing the analytics modules for players’ physical performances, and a set of self-guided exergames (digitally-mediated games with for exercises) that specially cater for the exercise and wellness for the elderly.

Interactive Guided Exercises
<table>
<thead>
<tr>
<th>Study Constructs</th>
<th>FUN</th>
<th>FITNESS</th>
<th>FRIENDSHIP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Enjoyment Level Scale</strong></td>
<td>• Enjoyment Level Scale 1</td>
<td>• Measurement of Joint Movement (Range of Motion) 4</td>
<td>• Semantics Differential Scale 7</td>
</tr>
<tr>
<td><strong>Playfulness Scale</strong></td>
<td>• Playfulness Scale 2</td>
<td>• Berg Balance Scale 5</td>
<td>• Intergroup Anxiety Scale 8</td>
</tr>
<tr>
<td><strong>Hedonic Scale</strong></td>
<td>• Hedonic Scale 3</td>
<td>• Measure of Psychological Well-Being 6</td>
<td>• Measure of Interpersonal Attraction Scale 9</td>
</tr>
<tr>
<td><strong>Berg Balance Scale</strong></td>
<td></td>
<td></td>
<td>• Measure of Sociability 10</td>
</tr>
</tbody>
</table>

Accepted Conference/Journal Papers


2. Evaluating Gesture-based Games with Older Adults on a Large Screen. *ACM SIGGRAPH 2011*.


5. Game Controllers for Older Adults: Experimental Study on Perceptions on Modality and Usability. *ACM Foundations of Digital Games 2012*.


8. Let’s Play Together: Effects of Video-Game Play on the Changes of Intergenerational Perceptions among Youth and Elderly Participants. *Computers in Human Behaviour (journal)*
Study A. Inter-generational partnerships with younger players

[FUN & FRIENDSHIP CONSTRUCTS]
Study A – Aim & Hypotheses

- **Aim**: To explore if inter-generational partnerships with younger players would moderate senior citizens’ behavior intentions in using digitally-mediated fitness games.

- **Hypotheses**
  - **H1**: Participants will show a more positive change in intergroup anxiety towards the other age group in general when the youth and elderly participant play video games together, compared to when they interact via daily routines.
  - **H2**: Participants will show a more positive change in attitudes towards the other age group in general when the youth and elderly participant play video games together, compared to when they interact via daily routine activities.
  - **H3**: Participants will show a more positive change in attraction towards their particular interaction partner who belongs to the other age group when the youth and elderly participant play video games together, compared to when they interact via daily routine activities.

- **Research Question**
  - What is the role of game enjoyment on intergenerational perceptions when the youth and elderly participants play games together?
Methodology

Youth and elderly were paired up to play digital games (VETS) over a period of 3 weeks for 9 sessions. There were 36 elderly participants and 12 youth participants recruited in the game playing experiment. Among them, 24 elderly participants were randomly assigned to 12 pairs. 12 elderly participants were assigned to play with 12 youth participants.

Questionnaires were administered, with interviews and focus groups conducted to probe perceptions. Videos were recorded during playtime for analysis.

<table>
<thead>
<tr>
<th></th>
<th>Elderly pairs</th>
<th>Elderly-youth pairs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Elderly</td>
</tr>
<tr>
<td>Male</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Female</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>Age range, mean and SD</td>
<td>61-84</td>
<td>63-84</td>
</tr>
<tr>
<td></td>
<td>M=72.67</td>
<td>M=73.83</td>
</tr>
<tr>
<td></td>
<td>SD=6.52</td>
<td>SD=6.29</td>
</tr>
<tr>
<td>Total number</td>
<td>24</td>
<td>12</td>
</tr>
</tbody>
</table>
Study A - Findings & Analyses

- **Fun**
  - **Game Enjoyment**

- **Friendship**
  - **Interpersonal Communication**

- **Friendship**
  - **Intergenerational Communication**

- **H1: Intergroup anxiety**
  Significant positive change in intergroup anxiety

- **H2: General attitudes towards other age group**
  Significant positive change in attitudes
RQ: What is the role of game enjoyment on intergenerational perceptions when the youth and elderly participants play games together?

Exergames can be an effective facilitator to enhance intergenerational perceptions as compared to daily routine activities used to facilitate intergenerational bonding.

Findings imply that increased contact hours via shared activities are likely to help members of different age groups develop particular perceptions such as attraction towards their interaction partners positively even when such shared activities are mundane.

Exergames can provide context for:
- common goals and intergroup cooperation that are key factors for successful intergroup interactions
- equal status between younger and older players for developing positive intergenerational perceptions.
Exergames, when used appropriately, can be used to promote intergenerational bonding and socialisation while having fun:

- elderly had a better opinion and tolerance towards the youths compared to the youths towards the elderly
- youth participants also reported a positive change in their attitudes towards the elderly participants.

Future studies could include other factors:

- personality traits
- game genres (e.g. Pokemon)

Study B. Will Exergames Improve Fitness? An Empirical Study Among Older Adults Using Physiological, Preference and Intention Measures

[FITNESS CONSTRUCT]

Huo Peng, Ma Cheng, Wang Linlin & Yin-Leng Theng
Wee Kim Wee School of Communication & Information
Nanyang Technological University, Singapore

ICA2014, 24 May 2014
**Study B: Will Exergames Improve Fitness?**

**Two research objectives:**

1. To measure some of the fitness related indicators for elderly exergaming.

2. To generate empirical evidence on the physiological impact of exergaming on the fitness of elderly subjects using wii and kinect as interventions.

**Five research questions:**

- **RQ 1:** Does exergame achieve any intensity of exercise for the elderly?
- **RQ 2:** Does exergame help elderly to improve their upper limb flexibility?
- **RQ 3:** Does exergame pose any risk to elderly fitness, such as hypertension on their blood pressure?
- **RQ 4:** What is elderly’s perception on the impact of exergaming towards their health?
- **RQ 5:** To what extent are elderly people willing to exercise with exergames?
### Summary of Hypotheses

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Hypothesis</th>
<th>Measurement Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RQ1</strong></td>
<td><strong>H1</strong>: Playing Wii games for moderate amount of time will help the elderly reach target heart rate equivalent of light exercise intensity.</td>
<td>Digital wrist sphygmomanometer</td>
</tr>
<tr>
<td></td>
<td><strong>H2</strong>: Playing Kinect games for moderate amount of time will help the elderly reach target heart rate equivalent of light exercise intensity.</td>
<td>Digital wrist sphygmomanometer</td>
</tr>
<tr>
<td><strong>RQ2</strong></td>
<td><strong>H3</strong>: Playing Wii games will help the elderly to improve their shoulder flexibility.</td>
<td>Video camera, Screen Protractor</td>
</tr>
<tr>
<td></td>
<td><strong>H4</strong>: Playing Kinect games will help the elderly to improve their shoulder flexibility.</td>
<td>Video camera, Screen Protractor</td>
</tr>
<tr>
<td><strong>RQ3</strong></td>
<td><strong>H5</strong>: Playing Wii games for moderate amount of time would not raise blood pressure to unhealthy levels.</td>
<td>Digital wrist sphygmomanometer</td>
</tr>
<tr>
<td></td>
<td><strong>H6</strong>: Playing Kinect games for moderate amount of time would not raise blood pressure to unhealthy levels.</td>
<td>Digital wrist sphygmomanometer</td>
</tr>
<tr>
<td><strong>RQ4</strong></td>
<td><strong>H7</strong>: The elderly conceive playing Wii games to be beneficial for their health.</td>
<td>Survey Questionnaire</td>
</tr>
<tr>
<td></td>
<td><strong>H8</strong>: The elderly conceive playing Kinect games to be beneficial for their health.</td>
<td>Survey Questionnaire</td>
</tr>
<tr>
<td><strong>RQ5</strong></td>
<td><strong>H9</strong>: The elderly are willing to exercise more with Wii console compared to physical exercise.</td>
<td>Survey Questionnaire</td>
</tr>
<tr>
<td></td>
<td><strong>H10</strong>: The elderly are willing to exercise more with Kinect compared to physical exercise.</td>
<td>Survey Questionnaire</td>
</tr>
</tbody>
</table>
### Results & Findings

- Exergames provide light exercise intensity

#### Table 1. Percentage of Heart Rate Reaching Different Exercise Intensity

<table>
<thead>
<tr>
<th>Group</th>
<th>Session 1</th>
<th>Session 2</th>
<th>Session 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>Kinect</td>
<td>Wii</td>
</tr>
<tr>
<td>Very Heavy</td>
<td>8.70%</td>
<td>8.33%</td>
<td>9.09%</td>
</tr>
<tr>
<td>Heavy &gt;90%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Heavy 80-89%</td>
<td>17.39%</td>
<td>8.33%</td>
<td>27.27%</td>
</tr>
<tr>
<td>Moderate 60-79%</td>
<td>73.91%</td>
<td>83.33%</td>
<td>63.64%</td>
</tr>
<tr>
<td>Light 35-59%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

- **Heart Rate (HR)**
  - number of heart beats per minute

- **Maximum Heart Rate (HRmax)**
  - highest heart rate that a healthy individual can achieve
  - theoretically estimated HRmax = 220 - age (Fox, 1968)

- **Exercise Intensity**
  - Heavy Intensity is 80 - 90% of your HRmax
  - Moderate Intensity is 60-79% of your HRmax
  - Light Intensity is 35 - 59% of your HRmax
### Hypotheses

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H1</strong>: Playing Wii games for moderate amount of time will help the elderly reach target heart rate equivalent of light exercise intensity.</td>
<td>Supported</td>
</tr>
<tr>
<td><strong>H2</strong>: Playing Kinect games for moderate amount of time will help the elderly reach target heart rate equivalent of light exercise intensity.</td>
<td>Supported</td>
</tr>
<tr>
<td><strong>H3</strong>: Playing Wii games will help the elderly to improve their shoulder flexibility.</td>
<td>Not Supported</td>
</tr>
<tr>
<td><strong>H4</strong>: Playing Kinect games will help the elderly to improve their shoulder flexibility.</td>
<td>Not Supported</td>
</tr>
<tr>
<td><strong>H5</strong>: Playing Wii games for moderate amount of time would not raise blood pressure to unhealthy levels.</td>
<td>Supported</td>
</tr>
<tr>
<td><strong>H6</strong>: Playing Kinect games for moderate amount of time would not raise blood pressure to unhealthy levels.</td>
<td>Supported</td>
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<tr>
<td><strong>H7</strong>: The elderly conceive playing Wii games to be beneficial for their health.</td>
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<tr>
<td><strong>H8</strong>: The elderly conceive playing Kinect games to be beneficial for their health.</td>
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</tr>
<tr>
<td><strong>H9</strong>: The elderly are willing to exercise more with Wii console compared to physical exercise.</td>
<td>Not Supported</td>
</tr>
<tr>
<td><strong>H10</strong>: The elderly are willing to exercise more with Kinect compared to physical exercise.</td>
<td>Not Supported</td>
</tr>
</tbody>
</table>

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Concluding Remarks

a. We would recommend exergame designers to impose certain level of difficulty and challenges to the games developed so that the elderly would exert more energy and excite them to carry on playing as been observed in our study.

b. Future research work:
   - Extends using exergames for other age groups.
   - Extends using exergames for other purposes, e.g., workplace exercise, well-being and wellness.
Study C: Exercise Intention Among Older Adults: Comparison Between Exergame and Traditional Exercise*

**Aim**

To assess the influence of both exercise settings and player interaction patterns on exercise intention in Singaporean older adults.

**Method**

- 2 X 2 (exercise settings: traditional exercise vs. exergame X player interaction patterns: collaborative vs. competitive play) between-subjects experimental intervention was conducted with 113 Singaporean older adults for 1 month.
- Enjoyment, social presence, and perceived behavioural control were assessed.

**Findings**

- Supported the importance of social presence and perceived behavioral control in older adults’ exercise prediction, and highlighted the effect of collaborative play in older adults’ exercise promotion.
- Compared with traditional exercise, the effect of exergames on motivating older adults to exercise was significantly lower.

Study D: Depression and Psychosocial Risk Factors among Singaporean Older Adults* [older workers?]

Aim
The study examines the risk factors of depression in late life, especially the psychosocial factors, among a sample comprising 162 community-dwelling Singaporean adults aged 65 years and above.

Method
An interview-based structured survey was conducted in multiple senior activity centers located in different parts of Singapore.

Findings
Results from the hierarchical regression analysis show that 32.9% of the variance in geriatric depression can be explained by the three psychosocial factors, among which loneliness, perceived social support, and the emotional regulation component of resilience are significantly associated with depression in older adults.

**Study E: Examining the Psychosocial Effects between Exergames and Traditional Exercise on Older Adults with Subthreshold Depression**

**Aim**
The study aimed to examine the psychosocial impacts of exergames on older adults with subthreshold depression, with a comparison to traditional exercise.

**Method**
- 55 community-dwelling Singaporean older adults diagnosed with subthreshold depression were assigned to perform either Wii Sports exergames or traditional exercise once a week, for 6 weeks.
- Depression was assessed every two weeks, while positive emotions and self-efficacy were assessed at pre- and post-test period.

**Findings**
- Results from multivariate analysis of variance (MANOVA) at post-test period indicated that participants in exergames had significantly lowered depression and produced higher positive emotions, than those in traditional exercise.
- A significant interaction effect between exercise platform and time was highlighted in the two-way analysis of variance (ANOVA) on depression among older adults.

3. Pilot Study: Exergames for Corporate Wellness
Motivation:
Digitally-mediated fitness games: Are they suitable for corporate wellness programmes?
Recent years growing trend of corporate wellness programs implemented widely in many companies (Ho, 1997).

Aligned with government’s promotion of healthy lifestyles.

Such programmes help in aiding employees in managing work stress, lowering absenteeism rates, increasing job satisfaction, co-worker relations and goal accomplishment.

With more employees becoming more health-conscious, it is important for companies to play a part to motivate and encourage them by implementing such programmes (Helmer, 1995).
3.1 Introduction - Corporate Wellness

- Digital Games for Fitness
  - Regular exercise is good for health, however, many perceive it as inconvenient and find it difficult to keep frequent exercise routines.
  - They use physical interaction, which may often be intense, as the primary mode of play (Warburton, 2010).
  - Studies have shown that users can achieve effective exercise through such games (Campbell, 2008).
Growing trend means more wellness programmes borrowing techniques from games to encourage exercise and foster healthy eating habits.

Competitive drive, spurred by ranking boards, peer pressure, digital rewards or real life rewards can get employees to improve their health (Wilde, 2012).

The result is a rise of “gamification”, which is the addition of an overlay of gaming concepts into daily lives to enable employees to achieve long lasting effects.
3.1 Study Aim & Methods

Aim

- To explore the acceptance of exergames in a work environment and investigate influencing factors through examining a conceptual model.

Methods

- A survey was conducted to measure perceived usefulness, perceived ease of use, attitude toward use, and intention to use.
- Participants need to watch a 5-minute YouTube video about Kinect training demos before completing the survey.
- Participants:
  - Sample size: N = 60 (mostly females – 60%)
  - Working adults 18 – 45 years old (93.3%)
  - 30 participants exercise regularly (more than 30 min/day or more than 30 hrs/week)

Technology Acceptance Model (TAM)
- Well-known model adapted from the Theory of Reasoned Action (Fishbein & Ajzen, 1975)
- Goal of TAM is to provide an explanation of the determinants of Information Technology acceptance.
- Two key determinants: Perceived Ease of Use and Perceived Usefulness

3.2 Model & Hypotheses

- H1: Perceived usefulness of exergames will positively influence attitude toward use.
- H2: Perceived usefulness of exergames will positively influence intention of use.
- H3: Perceived ease of use of exergames will positively influence perceived usefulness.
- H4: Perceived ease of use of exergames will positively influence attitude toward use.
- H5: User attitude toward exergames will positively influence his/her intention of use.
### 3.2 Measurement Items

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perceived usefulness (PU)</strong></td>
<td>The degree to which a person believes that using a particular system would enhance his or her job performance.</td>
</tr>
<tr>
<td></td>
<td>• Improvement in physical performance by using digital fitness games</td>
</tr>
<tr>
<td></td>
<td>• Improvement in fitness by using digital fitness games</td>
</tr>
<tr>
<td></td>
<td>• Difficulties in exercising without the digital fitness games</td>
</tr>
<tr>
<td></td>
<td>• Usefulness in the area of health by using digital fitness games</td>
</tr>
<tr>
<td><strong>Perceived ease of use (PEOU)</strong></td>
<td>The degree to which a person believes that using a particular system would be free from effort.</td>
</tr>
<tr>
<td></td>
<td>• Easiness to exercise by using digital fitness games</td>
</tr>
<tr>
<td></td>
<td>• Clear and understandable interactions with digital fitness games</td>
</tr>
<tr>
<td></td>
<td>• Little cumbersomeness while using digital fitness games</td>
</tr>
<tr>
<td></td>
<td>• Easiness to use by using digital fitness games</td>
</tr>
<tr>
<td><strong>Attitude towards use (AU)</strong></td>
<td>An individual’s positive or negative feelings about performing the targeted behavior</td>
</tr>
<tr>
<td></td>
<td>• Fun while playing digital fitness games</td>
</tr>
<tr>
<td></td>
<td>• Enjoyment while playing fitness games</td>
</tr>
<tr>
<td></td>
<td>• Interesting game</td>
</tr>
<tr>
<td></td>
<td>• Attention attraction</td>
</tr>
<tr>
<td><strong>Intention to use (IU)</strong></td>
<td>Measure of one's intention to perform a specified behavior</td>
</tr>
<tr>
<td></td>
<td>• Intention of using digital fitness games for exercise whenever possible</td>
</tr>
<tr>
<td></td>
<td>• Intention of using digital fitness games in the future</td>
</tr>
<tr>
<td></td>
<td>• Encouraging others to use digital fitness games for exercise</td>
</tr>
</tbody>
</table>
3.3 Summary of Findings

PU: Perceived Usefulness
PEOU: Perceived ease of use
AU: Attitude towards use
IU: Intention to use

Except for H1, other hypotheses (H2 to H5) were all supported in the structural equation model.
3.3 Summary of Findings

- This is a pilot study. Data for the study collected from 5 companies in Singapore. Investigated the constructs from TAM and included other constructs that could factor in the acceptance of digital games for corporate wellness.

- One interesting finding is that attitude towards using exergames was driven significantly by the perceived ease of use, but not perceived usefulness of the game. In other words, employees will enjoy playing the exergames if they feel that the game is easy to play rather than thinking of the game benefits to physical well-being.

- Findings emphasized the importance of usability in affecting employees’ acceptance of exergames, thereby implying that designers should balance hedonic and utilitarian considerations in exergame design and engagement.

- On-going work: More empirical (intervention) studies to investigate factors for the acceptance and adoption of using exergames in workplaces.
4. Discussion:

Exergames:
Fun, Socialisation and Fitness Aids for Workplace Health?
4a. Exergames for PLAY (and FUN) Opportunities
4b. Exergames for SOCIALISATION Opportunities
4c. Exergames for WELL-BEING and PRODUCTIVITY
4c. Exergames for PSYCHOSOCIAL WELL-BEING and PRODUCTIVITY

- Many dot-com companies have long recognized the link between productivity and a fun work environment.

- These companies know that more play at work results in more productivity, higher job satisfaction, greater workplace morale, and a decrease in employees skipping work and staff turnover.

- **Playing at work:**
  - keeps you functional when under stress
  - refreshes your mind and body
  - encourages teamwork
  - increases energy and prevents burnout
  - triggers creativity and innovation
  - helps you see problems in new ways

4. Discussion:

Exergames:
Besides Fun, Socialisation and Fitness, Are Exergames also relevant for Better TEAMBUILDING and COMMUNICATION at the Workplace?
Success of any business or organization depends largely on how effectively the members communicate.

Effective communication involves:
1. Listening
2. Use Names
3. Get to the Point
4. Let Others Talk
5. Non-verbal Language
6. Vocal Cues
7. Create an Atmosphere of Openness

[http://top7business.com/?Top-7-Strategies-For-Effective-Communication&id=772].
5. Concluding Remarks

- **Who are your users?**

- **Exergames: Scenarios and Opportunities**
  - General public
  - Workplace
  - Sports enthusiasts
  - Rehabilitation patients
  - Older adults

- **Novelty and Value-Added Contributions**
  - Game analytics
    - Exercise regimes
    - Fun (e.g., enjoyment, etc.)
    - Friendship (e.g. social bonding, exergames (VETS) as entertainment and socialisation aids for the elderly)
  - Health Analytics
    - Fitness (calories burnt)
  - Social Analytics
    - Improve relations, communications, teamwork.
5. Concluding Remarks

- There is potential in using exergames for the workplace to improve their psychosocial wellness, productivity, teambuilding, communication through gameplay with fun.

- More studies to be conducted drawing upon human and organizational theories and models to measure attitudes, intentions and behaviours towards exergames and digital exercises.

- Critical success factors contributing to using exergames for the workplace to be further explored.
Acknowledgements

- This initial study was supported by A*Star grant (Grant number: 0921530094) (2010 – 2013)
- Thanks to subjects participating in different studies.
- Thanks to NTU for the seed funding of $1.5M for CHESS at Wee Kim Wee School of Communication and Information (2013 – 2018)
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