**Publications similar to HEART project and how they proceed with their study.**

1. Smart phone sensing for distributed swim stroke coaching and research <http://www.cs.nott.ac.uk/~pszjm2/uploads/2014/10/ubimi400-marshall.pdf>

Keywords: Phone; Gesture learning; Swimming **UBICOMP 13’ Adjunct**

This is not a long paper, only a three-page-long workshop presentation I assume. However the author first raises the problem of existing swimming guiding system. It is either professional expensive body tracking system, or external feedback from coaches or variables like repetition numbers.

The opportunity of mobile swimming coaching system is a better solution since it has a lot of sensors already and it provides real time feedback. Then the author uses one complicated plot with many voltages-like to indicate that we can identify which stroke swimmers use and how fast they proceed with the difference of breathing. (their graph proves a swimming terminology)

He later describes person who can benefit from this system: swim coaching and researchers.

**In conclusion:** this publication indicates we need to compare the existing products and compare to them why we are better. Also how user would interact with our system and who can benefited from this. (In scientific community)

1. Towards customizable Games for Stroke Rehabilitation

<https://www.cse.wustl.edu/~gazihan/projects/stroke/chi2010/chi2010.pdf>

Keywords: Games, Stroke patient, design, **CHI2010**

This is a nine-page long publication with the focus on how patient would react to different set of games designed for them. This is a highly related publication to ours. The author first raises that existing games in stroke rehabilitation would use commercial products and only focuses on one small range of disabilities (like the chronic patients). So they design multiple games targeting to all patients at different stages of stroke (Work closely with therapists)

They uses Wii Remotes as their input devices, and chose only four stroke chronic patients as their examples. Each with pseudonym but detailed stroke background information. Then they listed the nine games they have developed, each with detailed information and how they specifically design for the stroke patients community. But on average, each game was only played by 2-3 patients each with 20 minutes.

**In conclusion;** This publication is recommended to closely looked and compare to our study. Their best insights are how they targeting stroke patients and design games really for them. For example, they mentioned competitive mode is not working for stroke patients because it created a social difficulty where you compare other patients, they modify it to become “ally” mode where people help each other to receive better score.

1. Virtual-Reality Balance Training with a Video-Game System improves dynamic balance in chronic stroke patients.

<https://www.ncbi.nlm.nih.gov/pubmed/22976384>

Keywords: VR, Stroke patients, chronic, balance, **Tohoku J.Exp Med 2012**

This publication is using existing VR games for stroke patients, this attempt is conducted not from com-sci side but from medical field. This gives a strong reference on what we should do if want to achieve some publications in medical field.

One thing that stands out in this publication is that doctors perform quantification for each movement the stroke patients behave. For example, they have a scoring system for how bad the patient’s balance system is BBS(Berg Balance Scale) and the Timed Up and Go test (TUG). These scores add many authenticity in this publication. The graph doctors used are also compelling. By comparing the {before/after) test scores of patients.

Also their experiment was a six week long experiment, by comparing data from a span of nearly 2 month, they can get significant data differences. However they don’t really consider enough on the patients experience. The Wii Fit board they used is designed for healthy users. All their experiments has a physical therapists near to the patients in case of falling.

1. Motor Imagery and Stroke rehabilitation: a critical discussion

<https://www.jsmf.org/meetings/2008/may/de%20Vries%20&%20Mulder%202007.pdf>

Keyword: Motor imagery **J Rehabilit Med 2007**

This publication is talking about the medical terminology motor imagery. Since this is the main reason we started our project. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3304547/#B11>

This is the questionnaire these doctors cited when they started the experiment, it is a key feature in the observation-based learning for post-stroke motor recovery.

This study showed that different imagery training strategies can potentially improve different aspects in post-stroke movement rehabilitation. It might be that a third person, visual strategy might be important to improve the relearning of new skills, whereas motor imagery could play a role in the recovery of actual motor co-ordination processes.

**In Conclusion;** this is a trustworthy publication in proving motor imagery is the best way to perform in stroke rehabilitation process. Since most com-sci publications only focuses on building a game rather than letting patients see the correlation of the game object with their own body. This is a proof that we are a better system than previous attempts/

1. Virtual Reality in Stroke Rehabilitation: A meta analysis and implications for clinicians

<https://www.researchgate.net/publication/51034074_Virtual_Reality_in_Stroke_Rehabilitation_A_Meta-Analysis_and_Implications_for_Clinicians>

Keywords: Analysis, VR, Stroke rehabilitation. **Stroke May 2011**

This publication is a