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HEROES

HEROES OF THE SEA
Home-based Exergame for Enhancing Resistance to Falls after Stroke

Aurora Ruiz-Rodríguez[1], Lotte Hagedoorn[2], Vivian Weerdesteyn[2], Hermie J. Hermens[3], Edwin van Asseldonk[1]

[1]Department of Biomechanical Engineering, University of Twente.
[2]Department of Rehabilitation, Radboud University Medical Center.
[3]Department of Biomedical Signals and Systems, University of Twente.

a.ruizrodriguez@utwente.nl

INTRODUCTION

To improve balance control and prevent falls in people with stroke, it's important to enhance their ability to recover from a perturbation by stepping. Serious video games provide a way to train in a fun and challenging way. Some video games train voluntary stepping, but it remains challenging to induce perturbations and train recovery steps at home.

Figure 1. Design of the HEROES exergame in a Home Environment.

OBJECTIVE

We proposed the design of an exergame to train stepping responses of stroke patients at home, using recent findings of action observation and motor imagery.

USER-CENTERED METHODOLOGY

Data collection:

- Semi-structured Interviews with physiotherapists and patients (n=5, AVG time= 60.2 minutes)
- Design sessions to establish the game concept
- Game Experience Questionnaire (GEQ) in-game mode (n=12 healthy young participants)

Data analysis:

Qualitative techniques: (e.g. open coding and affinity diagrams) to define the exercise and therapeutic goal

RESULTS & DISCUSSION

Participants played the tutorial and 2 levels of the HEROES of the sea exergame.
The game features an adventurer standing on a raft that travels on the sea. The participant needs to mimic the stepping responses of the adventurer. The therapeutic goal is achieved by managing directions, speed of response and length of the step and can train paretic and non-paretic legs.
Followed by the GEQ in-game mode, which consists of a 5-point Likert scale of 7 items.
The average on the items Competence, Sensory and Imaginative Immersion, Flow, and Positive affect was rated with a high score (4 out of 5). The items Tension, Challenge and Negative affect had low scores (2 out of 5).

CONCLUSION

*This evaluation showed promising input regarding the game experience. However, the **Challenge** score was too low in this group of participants. Further analysis of the target population is needed to determine whether this needs improvement*

Interviews   Design sessions   Prototype   Game experience questionnaire

Figure 2. User-Centred Methodology with outcomes:
a)Fragment of Affinity diagram. b)Game Concepts. c)HEROES of the sea prototype.

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