



**AALBORG UNIVERSITY**  
DENMARK

**Aalborg Universitet**

## **The Heart Game**

*A New Tool for Digital Patient Education for Patients With Heart Failure*

Hamborg, Lisbeth Gade; Petersen, Rikke Jankuhn; Spindler, Helle; Dinesen, Birthe

*Published in:*  
Iproceedings

*DOI (link to publication from Publisher):*  
[10.2196/41109](https://doi.org/10.2196/41109)

*Creative Commons License*  
CC BY 4.0

*Publication date:*  
2022

*Document Version*  
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

*Citation for published version (APA):*  
Hamborg, L. G., Petersen, R. J., Spindler, H., & Dinesen, B. (2022). The Heart Game: A New Tool for Digital Patient Education for Patients With Heart Failure. *Iproceedings*, 8(1), Article e41109.  
<https://doi.org/10.2196/41109>

### **General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

### **Take down policy**

If you believe that this document breaches copyright please contact us at [vbn@aub.aau.dk](mailto:vbn@aub.aau.dk) providing details, and we will remove access to the work immediately and investigate your claim.

---

## Abstract

# The Heart Game: A New Tool for Digital Patient Education for Patients With Heart Failure

---

Lisbeth Gade Hamborg<sup>1</sup>, BSc, MSc; Rikke Jankuhn Petersen<sup>1</sup>, BSc, MSc; Helle Spindler<sup>2</sup>, MSc, PhD; Birthe Dinesen<sup>1</sup>, PhD

<sup>1</sup>Laboratory for Welfare Technology- Digital Health & Rehabilitation, Sport Sciences- Performance and Technology, Department for Health Science and Technology, Aalborg University, Aalborg, Denmark

<sup>2</sup>Department of Psychology and Behavioral Sciences, Aarhus University, Aarhus, Denmark

### Corresponding Author:

Lisbeth Gade Hamborg, BSc, MSc

Laboratory for Welfare Technology- Digital Health & Rehabilitation, Sport Sciences- Performance and Technology

Department for Health Science and Technology

Aalborg University

Fredrik Bajers Vej 7D

Aalborg

Denmark

Phone: 45 50820076

Email: [Lghamborg@hotmail.com](mailto:Lghamborg@hotmail.com)

---

## Abstract

**Background:** The COVID-19 pandemic has shown the need for new ways to perform remote patient education. Patients with heart failure are associated with a high readmission rate. Rehabilitation can prevent hospital readmissions, but there is poor participation in rehabilitation of patients with heart failure. Based on user-driven innovation in the Future Patient research project, we have developed the prototype of the digital Heart Game. The Heart Game is a new approach to digital patient education, where patients can access a digital board game via an app; through the board game, they can be presented with quizzes, activities, and reflection questions, all related to heart failure.

**Objective:** The objective of our study was to assess the usability of the Heart Game prototype app.

**Methods:** A total of 6 patients with heart failure were recruited. Think-aloud test, where participants were observed during play and sound and iPad screens were recorded, was conducted, followed by a questionnaire immediately after playing. Finally, an interview (n=6) was carried out. Qualitative data were analyzed in NVivo software (version 12.0).

**Results:** In total, 6 patients with heart failure (83% male; mean age 66 years) participated in the think-aloud tests. One participant did not complete the game. The game duration was from 9 minutes and 14 seconds to 16 minutes and 13 seconds. Findings from the think-aloud tests were shown in themes: digital games are a new world; practice makes perfect; the Heart Game is illogical; tasks are not generalizable, in understandable formulations, or entertaining; and the Heart Game is relevant, fun, and entertaining to play.

**Conclusions:** The usability of the Heart Game shows opportunities for digital patient education. However, there are some challenges in the prototype with illogical game structures in the board game. Further test and development of the prototype needs to be performed.

(*iproc* 2022;8(1):e41109) doi: [10.2196/41109](https://doi.org/10.2196/41109)

---

## KEYWORDS

telehealth; digital patient education; heart failure; game prototype

## Conflicts of Interest

None declared.

---

---

*Edited by T Leung; this is a non-peer-reviewed article. Submitted 15.07.22; accepted 19.08.22; published 23.08.22.*

*Please cite as:*

*Hamborg LG, Petersen RJ, Spindler H, Dinesen B*

*The Heart Game: A New Tool for Digital Patient Education for Patients With Heart Failure*

*iproc 2022;8(1):e41109*

*URL: <https://www.iproc.org/2022/1/e41109>*

*doi: [10.2196/41109](https://doi.org/10.2196/41109)*

*PMID:*

©Lisbeth Gade Hamborg, Rikke Jankuhn Petersen, Helle Spindler, Birthe Dinesen. Originally published in Iproceedings (<https://www.iproc.org>), 23.08.2022. This is an open-access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work, first published in Iproceedings, is properly cited. The complete bibliographic information, a link to the original publication on <https://www.iproc.org/>, as well as this copyright and license information must be included.