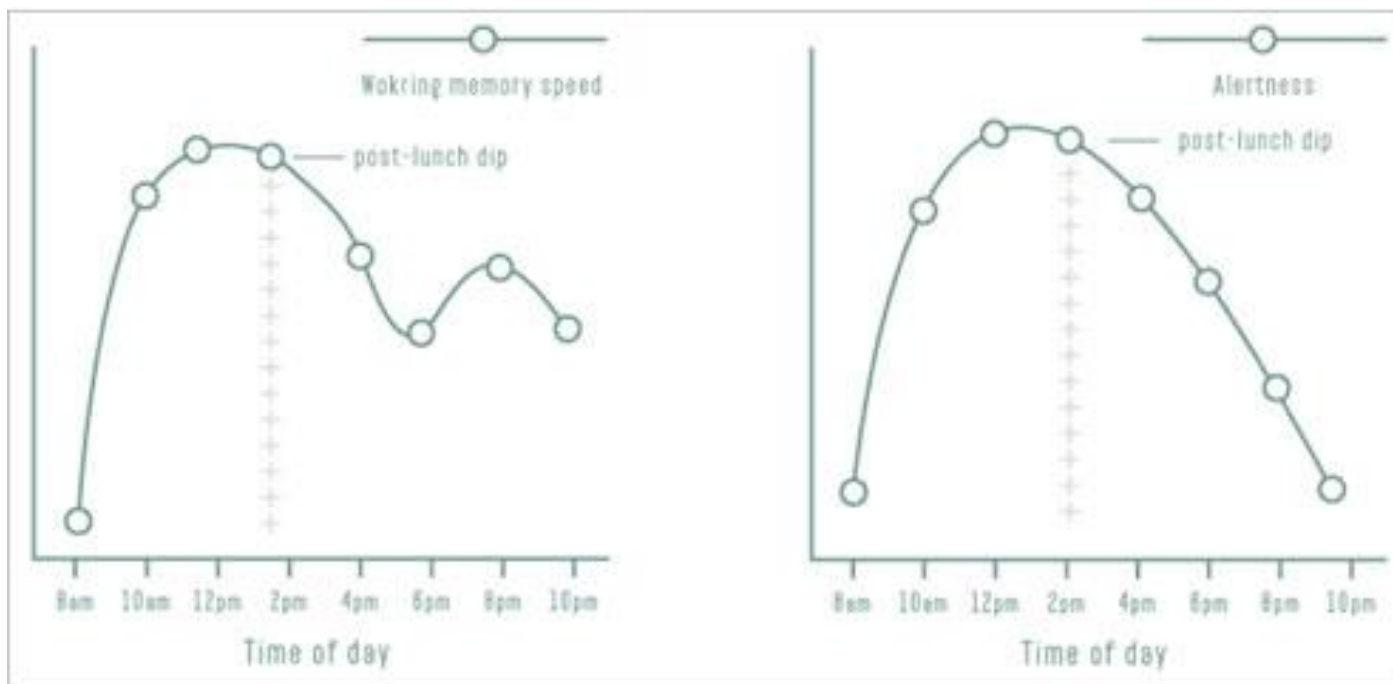


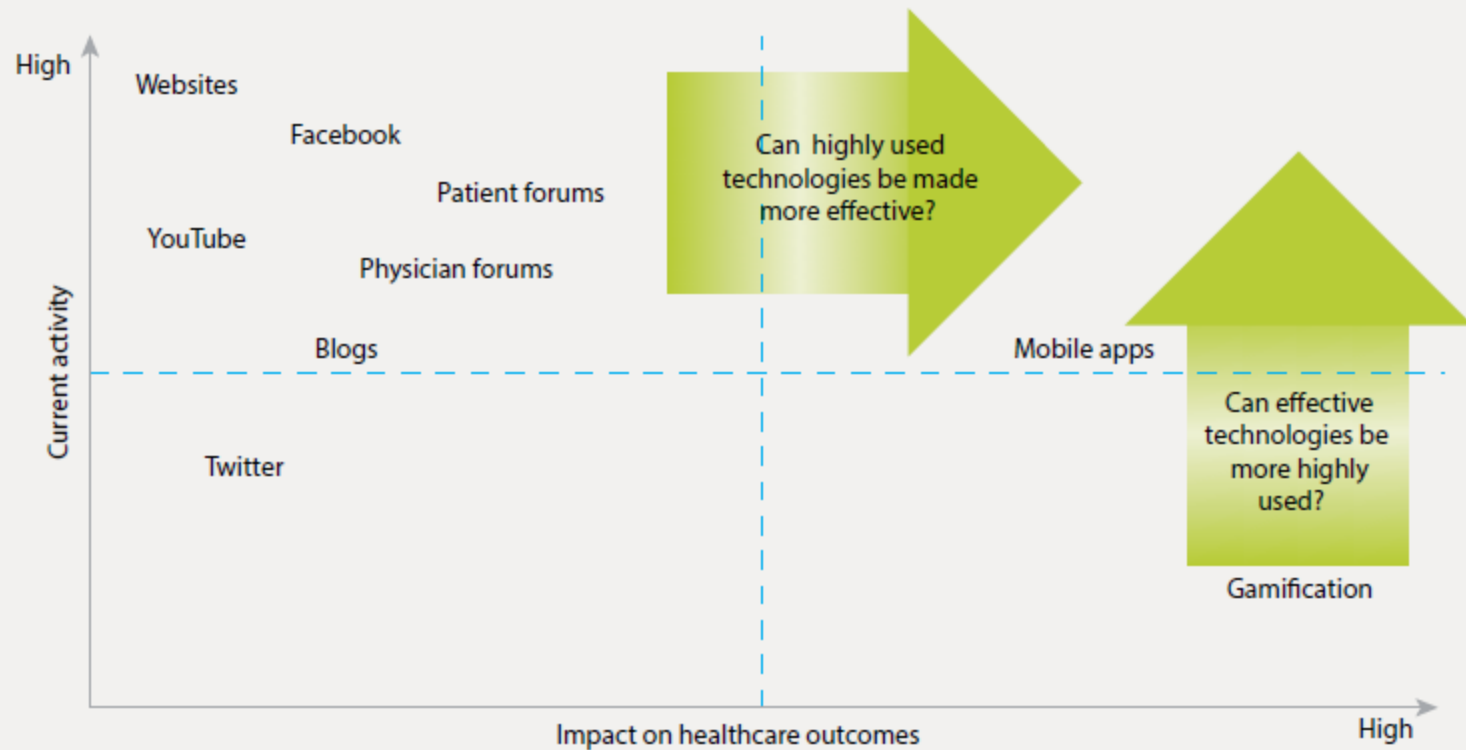
Internet and virtual reality: how can we use it in Heart Failure care

Prof dr Tiny Jaarsma

Tiny.jaarsma@liu.se



Is activity in the digital space highest in areas with the least current healthcare impact?

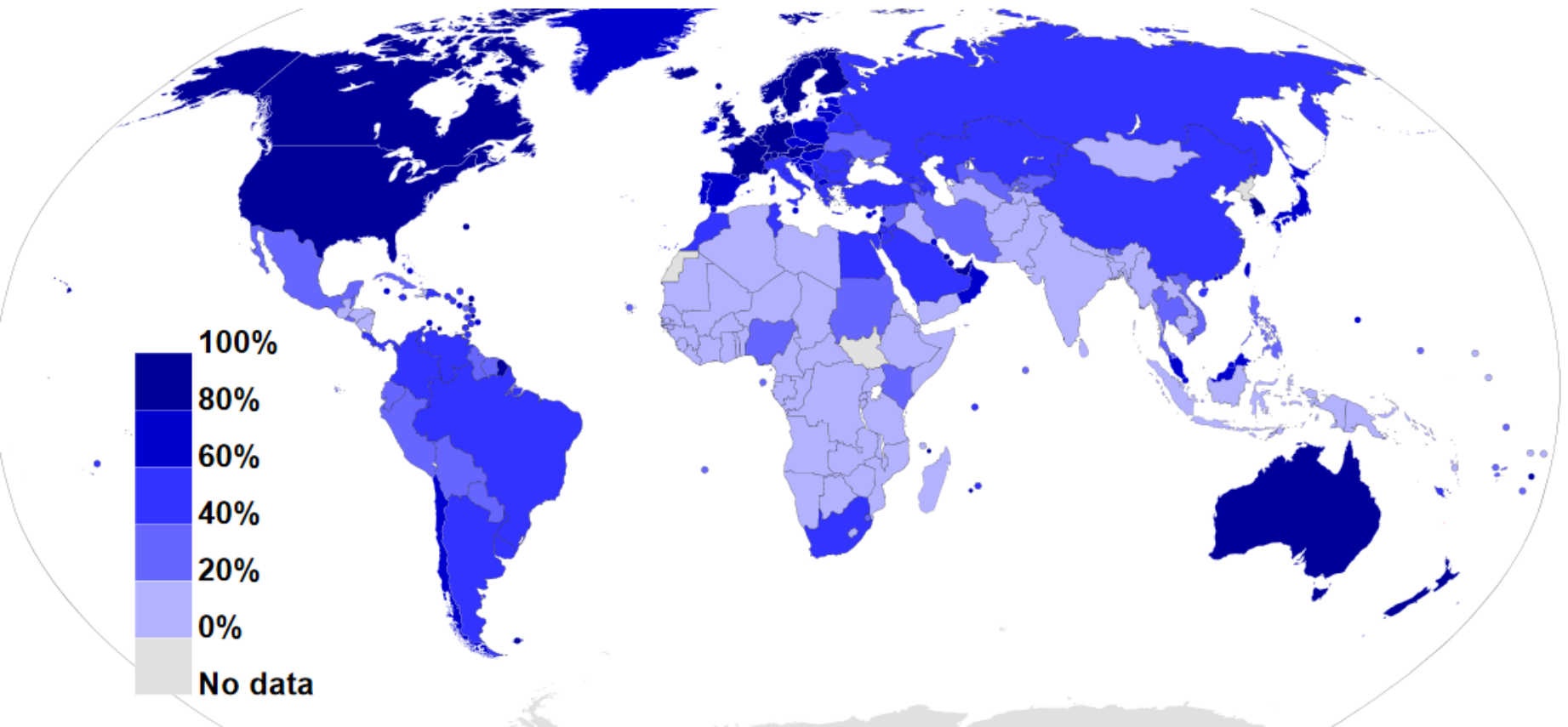

















Source: IMS Health Consulting

Goal of the presentation

- Inspire
- Open your mind
- Take away hurdles
- Bring new hurdles

Internet use in the world



Country or area 	Internet users ^[2] 	Rank 	Penetration ^[3] 	Rank 
 <i>Falkland Islands</i> ^[6]	2,842	208	96.9%	1
 Iceland	300,656	139	96.0%	2
 Norway	4,471,907	65	95.0%	3
 Sweden	8,557,561	44	94.0%	4
 Netherlands	15,559,488	32	93.0%	5
 Denmark	5,155,411	58	93.0%	5
 Luxembourg	468,348	132	92.0%	7
 <i>Bermuda</i>	63,070	178	91.3%	8
 Finland	4,789,266	61	91.0%	9
 New Zealand	3,873,982	73	89.5%	10

Virtual reality

- Virtual reality: computer-simulated environments that can simulate physical presence in places in the real world, as well as in imaginary worlds
- Serious games: games serving serious purposes like education, training, advertising, research and health.





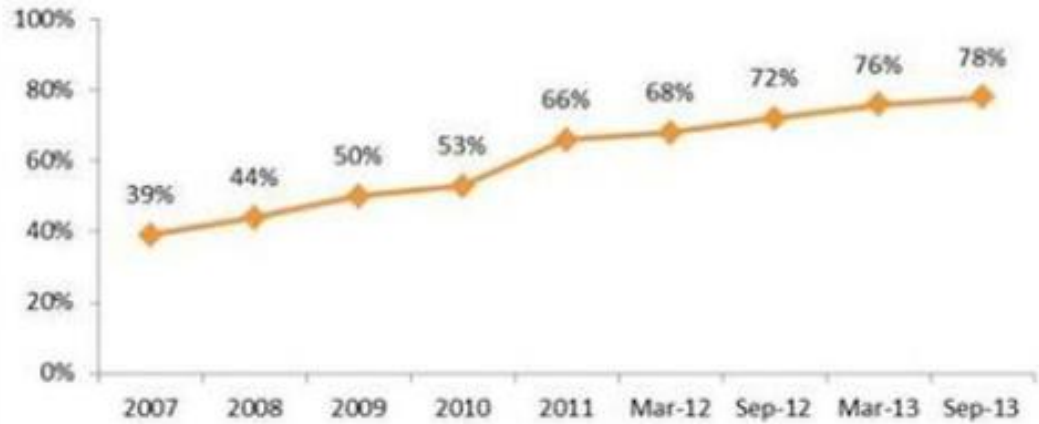
Internet and VR in (acute) HF care

- Professionals
 - Knowledge transfer
 - Skill building
 - Stay up-to-date

Internet and VR in HF care

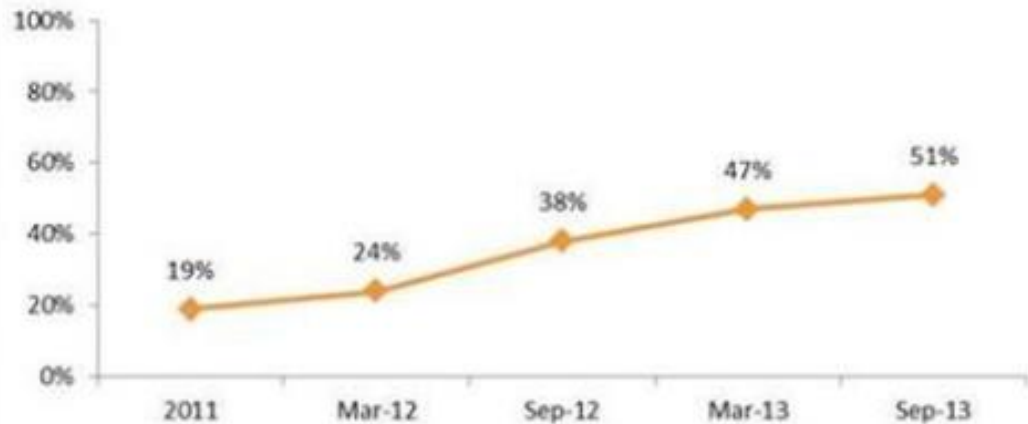
- Professionals
 - Knowledge transfer
 - Internet/interactive learning
 - Skill building
 - Learn and practice
 - Simulation
 - Stay up-to-date
 - Guidelines
 - Publications

Physician Usage of Smartphones for Professional Purposes Over Time



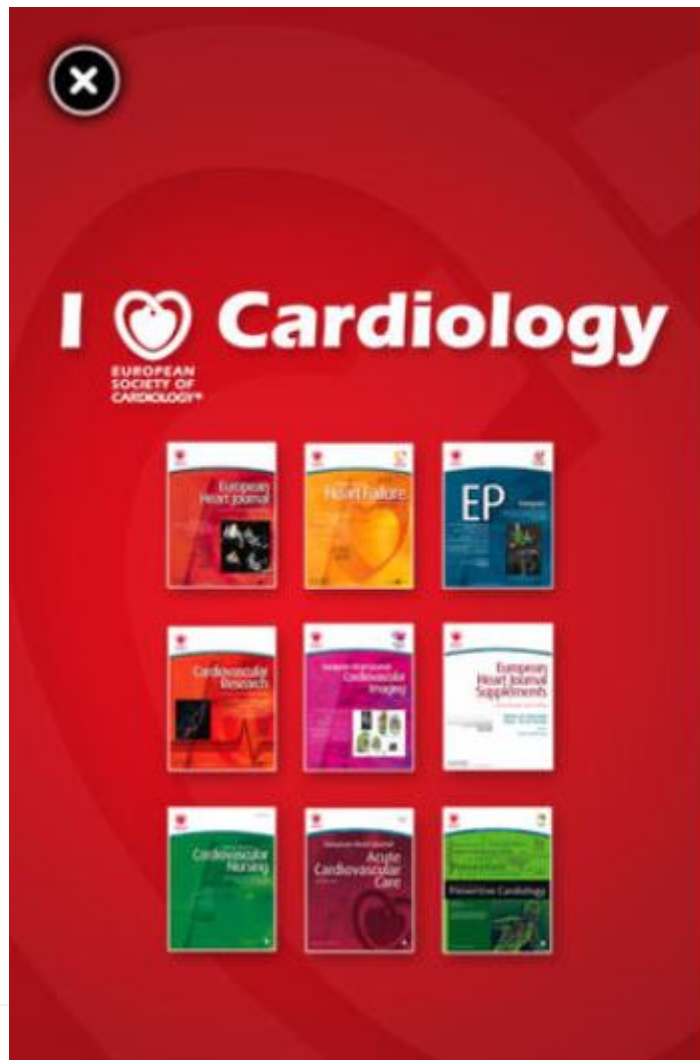
Kantar Media Sources & Interactions Study, September 2013 - Medical/Surgical Edition

Physician Usage of Tablets for Professional Purposes Over Time



Kantar Media Sources & Interactions Study, September 2013 - Medical/Surgical Edition

Apps to professional journal



ING REALITY

Heart Failure Trials App

Heart Failure Trials



iPhone – 5 stars with 77 ratings - \$2.99

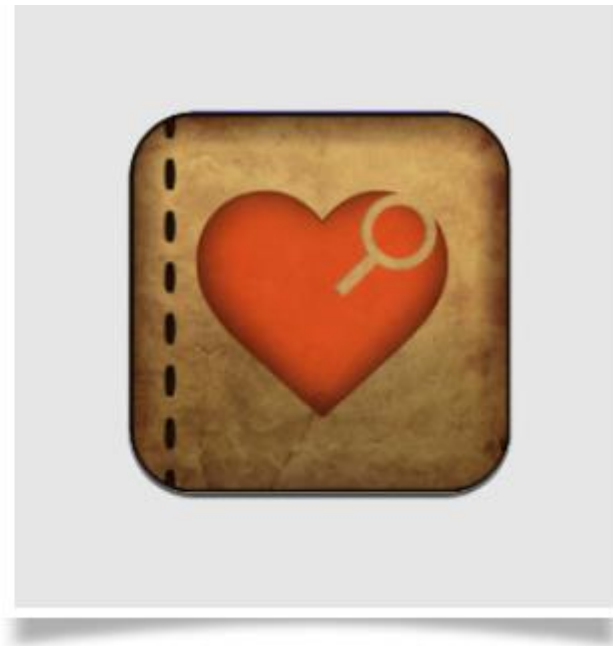
Android – 4.7 stars with 58 ratings - \$2.99



If you have heart disease or are caring for someone who does, there's no better time than today to educate yourself on clinical trials around heart failure.



The five-star Heart Failure Trials app keeps you up to date with the latest in heart failure research and evidenced-based medicine. Developed by renowned heart failure cardiologist David Majure, MD MPH, the database is constantly updated with the latest trials and expert opinions. Topics reviewed include beta-blockers, antiarrhythmics



Staying updated: Medscape

Medscape

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Read breaking medical news
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Heart Failure

Print

Author: Ioana Dumitru, MD; Chief Editor: Henry H Ooi, MB, MRCPI [more...](#)

Overview Presentation DDx Workup Treatment Medication

Updated: Mar 10, 2014

Practice Essentials

Practice Essentials

Background

Heart failure develops when the heart, via an abnormality of cardiac function (detectable or not), fails to pump blood at a rate commensurate with the requirements of the metabolizing tissues or is able to do so only with an elevated diastolic filling pressure.

Pathophysiology

Essential update: Smoking linked to increased risk of ventricular tachyarrhythmia or death in patients with mild heart failure

Etiology

... 6485 ... 700 ... 1407

LiU EXPANDING REALITY

Procedures Can Be Learned on the Web: A Randomized Study of Ultrasound-guided Vascular Access Training

Jordan Chenkin, MD, Shirley Lee, MD, MHSc, FCFP, Thien Huynh, Glen Bandiera, MD, MEd, FRCPC

Abstract

Objectives: Web-based learning has several potential advantages over lectures, such as anytime-anywhere access, rich multimedia, and nonlinear navigation. While known to be an effective method for learning facts, few studies have examined the effectiveness of Web-based formats for learning procedural skills. The authors sought to determine whether a Web-based tutorial is at least as effective as a didactic lecture for learning ultrasound-guided vascular access (UGVA).

Methods: Participating staff emergency physicians (EPs) and junior emergency medicine (EM) residents with no UGVA experience completed a precourse test and were randomized to either a Web-based or a didactic group. The Web-based group was instructed to use an online tutorial and the didactic group attended a lecture. Participants then practiced on simulators and live models without any further instruction. Following a rest period, participants completed a four-station objective structured clinical examination (OSCE), a written examination, and a postcourse questionnaire. Examination results were compared using a noninferiority data analysis with a 10% margin of difference.

Table 2
Results of the OSCE and Written Examinations

	Web group (n = 11)	Didactic Group (n = 10)	Absolute Difference	p-Value
OSCE score	75.0 (± 9.3)	77.8 (± 3.6)	-2.8 (-9.3, 3.8)	0.39
Written examination	78.8 (± 7.3)	80.3 (± 6.6)	-1.4 (-7.8, 5.0)	0.65
Written score improvement	26.1 (± 13.1)	25.8 (± 8.5)	0.3 (-9.7, 9.2)	0.95
Data are reported as % (\pm SD) or % (95% CI). CI = confidence interval; OSCE = objective structured clinical examination; SD = standard deviation.				

Learning by health care providers

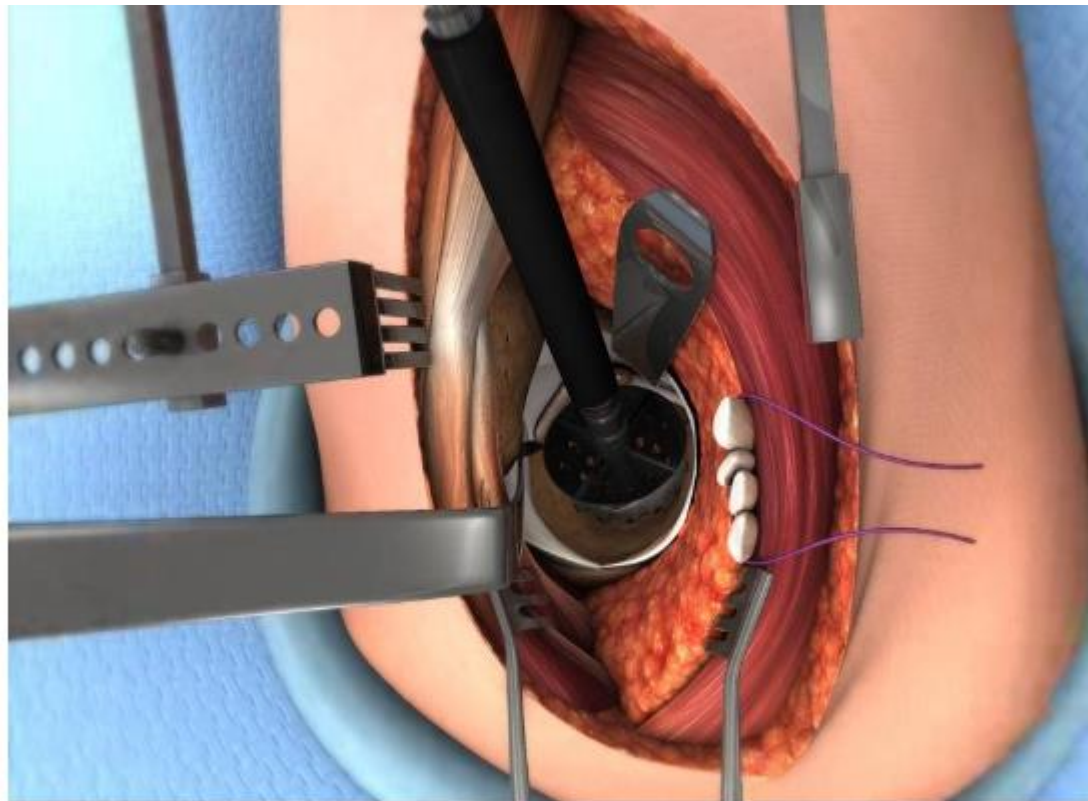
Examples

- Resuscitation
- Triage
- Procedures





Skills: touch surgery App



Touch Surgery



Clinical Investigations

A Quality Assessment of Cardiac Auscultation Material on YouTube

Christian F. Camm, BA (Hons.); Nicholas Sunderland, BA (Hons.); A. John Camm, MD
New College (C.F. Camm), St. Hugh's College (Sunderland), Oxford University, Oxford, United
Kingdom; Department of Clinical Sciences, St. George's University of London (A.J. Camm),
London, United Kingdom

- Given the lack of regulation of such videos, it is likely that a proportion of online resources are still of poor quality with substantial educational flaws.
- Utilization for education, continued assessment of content is required.

HF doctor blog



From: Online Medical Professionalism: Patient and Public Relationships: Policy Statement From the American College of Physicians and the Federation of State Medical Boards

Ann Intern Med. 2013;158(8):620-627. doi:10.7326/0003-4819-158-8-201304160-00100

Table. Online Physician Activities: Benefits, Pitfalls, and Recommended Safeguards

Activity	Potential Benefits	Potential Pitfalls	Recommended Safeguards
Communications with patients using e-mail, text, and instant messaging	Greater accessibility Immediate answers to nonurgent issues	Confidentiality concerns Replacement of face-to-face or telephone interaction Ambiguity or misinterpretation of digital interactions	Establish guidelines for types of issues appropriate for digital communication Reserve digital communication only for patients who maintain face-to-face follow-up
Use of social media sites to gather information about patients	Observe and counsel patients on risk-taking or health-averse behaviors Intervene in an emergency	Sensitivity to source of information Threaten trust in patient-physician relationship	Consider intent of search and application of findings Consider implications for ongoing care
Use of online educational resources and related information with patients	Encourage patient empowerment through self-education Supplement resource-poor environments	Non-peer-reviewed materials may provide inaccurate information Scam "patient" sites that misrepresent therapies and outcomes	Vet information to ensure accuracy of content Refer patients only to reputable sites and sources
Physician-produced blogs, microblogs, and physician posting of comments by others	Advocacy and public health enhancement Introduction of physician "voice" into such conversations	Negative online content, such as "venting" or ranting, that disparages patients and colleagues	"Pause before posting" Consider the content and the message it sends about a physician as an individual and the profession
Physician posting of physician personal information on public social media sites	Networking and communications	Blurring of professional and personal boundaries Impact on representation of the individual and the profession	Maintain separate personas, personal and professional, for online social behavior Scrutinize material available for public consumption
Physician use of digital venues (e.g., text and Web) for communicating with colleagues about patient care	Ease of communication with colleagues	Confidentiality concerns Unsecured networks and accessibility of protected health information	Implement health information technology solutions for secure messaging and information sharing Follow institutional practice and policy for remote and mobile access of protected health information

Some safeguards

Email

- Establish guidelines
- Digital communication for patients who have face to face contact only
- How to chart

Internet sites

- Make a list of recommended site

Blogs

- Pause before posting

Social media

- Maintain seperate personas

- Providers Guidelines adherence
 - Adequate up to date Knowledge
 - Skills
 - Tools
- Patients
 - Treatment adherence
 - Knowledge, skills
 - Tools

Internet and virtual reality to improve patient adherence

- Internet patient education sites
- Internet tools for monitoring
- Telemonitoring (internet based)
- Applications to learn about diet, exercise, symptoms
- Facebook
- 'Games'

Easy and speedy access to relevant information

The screenshot displays the heartfailurematters.org website. At the top left is the logo, which consists of a stylized heart shape made of two overlapping hands, followed by the text 'heartfailurematters.org'. Below the logo is a cartoon illustration of a woman with short brown hair, wearing a light green shirt, with a play button icon on her chest. To the right of the illustration is the text 'ANNA, YOUR VIRTUAL GUIDE'. Below this is a vertical list of navigation links, each preceded by a small icon: a heart for 'Understanding heart failure', a stethoscope for 'What can your doctor do', a checkmark for 'What can you do', a smiley face for 'Living with Heart Failure', a plus sign for 'For caregivers', an exclamation mark for 'Warning signs', a question mark for 'FAQ', and a speech bubble for 'Ask Your Doctor'. On the right side of the page, there is a large photograph of an older man with a white beard and hair, wearing a white t-shirt. Overlaid on the top right of the page is a language selection dropdown menu showing a flag icon and the word 'English'. In the top right corner of the main content area, there is a red 'SCROLL DOWN' button with a downward-pointing arrow. The main heading 'HEART FAILURE MATTERS:' is in large, bold, teal letters, followed by the subtitle 'PRACTICAL INFORMATION FOR PATIENTS, FAMILIES AND CAREGIVERS.' in smaller, grey letters.

heartfailurematters.org

ANNA, YOUR VIRTUAL GUIDE

- Understanding heart failure
- What can your doctor do
- What can you do
- Living with Heart Failure
- For caregivers
- Warning signs
- FAQ
- Ask Your Doctor

HEART FAILURE MATTERS:
PRACTICAL INFORMATION FOR PATIENTS, FAMILIES AND CAREGIVERS.

English

SCROLL DOWN

The friendly face of heartfailurematters.org ... meet Anna



You can play and pause
Anna by using the
buttons above

- Anna helps users navigate the site
- For first-time visitors and those who are not web-savvy
- She greets the user once in every main section
- Easy to activate, mute or pause

Easy and speedy access to relevant information

AN ANIMATED JOURNEY THROUGH HEART FAILURE

A series of 9 simple, captivating animations explaining heart failure and its treatment

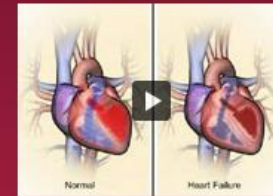
These narrated animations explain how a healthy heart works, what happens to it in heart failure and how various treatments work to improve your health



How the normal heart works



What goes wrong in heart failure



How the heart and body adapt in heart failure

USEFUL TOOLS



monitoring chart



symptom event diary



warning signs



appointment record



medicine chart


BACK TO TOP


Click to print these tools to help you monitor your heart failure

Easy and speedy access to relevant information


AN ANIMATED JOURNEY THROUGH HEART FAILURE

A series of 9 simple, captivating animations explaining heart failure and its treatment


These narrated animations explain how a healthy heart works, what happens to it in heart failure and how various treatments work to improve your health



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USEFUL TOOLS




monitoring chart




symptom event diary



warning signs



appointment record




medicine chart

[BACK TO TOP](#)

Click to print these tools to help you monitor your heart failure

MONITORING YOUR HEART FAILURE – SIGNS CHART



Use the table below to measure and record your weight, blood pressure and heart rate regularly.

You can then take this chart with you when you next see your doctor or nurse and discuss any changes. If you notice any large changes, you should discuss these with your doctor or nurse as soon as possible.

MONTH	MEASURES	MON	TUE	WED	THU	FRI	SAT	SUN
WEEK	WEIGHT kg							
from	BLOOD PRESSURE mm Hg							
to	HEART RATE beats per minute							
WEEK	WEIGHT kg							
from	BLOOD PRESSURE mm Hg							
to	HEART RATE beats per minute							
WEEK	WEIGHT kg							
from	BLOOD PRESSURE mm Hg							
to	HEART RATE beats per minute							
WEEK	WEIGHT kg							
from	BLOOD PRESSURE mm Hg							
to	HEART RATE beats per minute							

Developed by the Heart Failure Association of the European Society of Cardiology

Easy and speedy access to relevant information

PATIENT AND CAREGIVERS VIDEOS

In this section you can watch, listen or read interviews with other people with heart failure and their caregivers.



Seeing other bypass patients exercising made him feel more positive



What can make his palpitations worse



Feels he can contact his heart failure nurse at any time

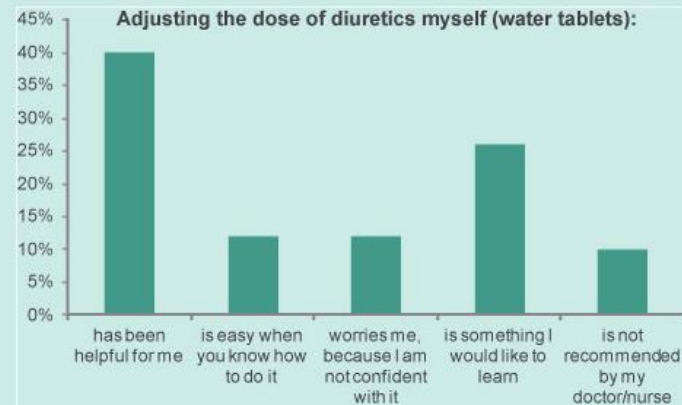
POLL

Since I was diagnosed with heart failure, episodes of depressed mood:

- ☐ never occurred
- ☐ cleared when my heart failure was treated
- ☐ come and go depending on symptoms
- ☐ improved with antidepressant medication
- ☐ still occur frequently

Vote

Previous poll results



 [BACK TO TOP](#)

Medication reminders



FREE

Easily create and print medication schedules

MyMedSchedule.com®

Revised: 04/29/13 at 7:59pm

Jonathan B Doe DOB: 12/21/1950
Allergies: **No known drug allergies**

Wife: Jane Doe
(757) 555-5555

Take These Medications	At These Times		
	8am	8pm	10pm
Prograf® (Tacrolimus) 1 mg Capsule(s)	3 Capsule(s)	3 Capsule(s)	
Rapamune® (Sirolimus) 1 mg Tablet(s)	2 Tablet(s)		
Valcyte® (Valganciclovir Hydrochloride) 450 mg Tablet(s)	1 Tablet(s)		
Prednisone 5mg Tablet(s)	Please see your Tapering Schedule		
Prilosec® (Omeprazole) 20 mg Capsule(s)	1 Capsule(s)		

MyMedSchedule.com®

Revised: 4/29/2013 at 7:59 PM

Jonathan B Doe DOB: 12/21/1950
Allergies: **No known drug allergies**

Wife: Jane Doe
(757) 555-5555

Medication	8 am	8 pm	10 pm
Prograf® (Tacrolimus) 1 mg Capsule(s)	3	3	
Rapamune® (Sirolimus) 1 mg Tablet(s)	2		
Valcyte® (Valganciclovir Hydrochloride) 450 mg Tablet(s)	1		
Prednisone 5mg Tablet(s)	Please see your Tapering Schedule		

Free medication schedules, reminders, and **NEW** Health Tracker

Thousands of patients and caregivers use MyMedSchedule to manage meds and labs on the go, set reminders, and make it easier to communicate with their healthcare providers. Now MyMedSchedule includes **My Health Tracker** and

Mobile Apps Help Ease Congestive Heart Failure Symptoms

A UCLA study suggests that linking mobile sensors that monitor physiological functions and physical activities to smartphones may help reduce the risk of rehospitalization.

Wireless sensors that monitor physiological functions and physical activities can help reduce symptoms of congestive heart failure and potentially prevent many hospital readmissions, a new study suggests.

Researchers at the [UCLA Wireless Health Institute](#) and the [UCLA School of Nursing](#) found a small but statistically significant reductions in abnormal readings of weight and blood pressure among elderly patients who had access to wireless, mobile monitors and regular feedback from physicians. They reported their [findings](#) in the Journal of Medical Systems.

Internet, email and phone: maintenance of physical activity



J Med Internet Res. Mar 2014; 16(3): e77.
Published online Mar 11, 2014. doi: [10.2196/jmir.3132](https://doi.org/10.2196/jmir.3132)

PMCID: PMC3967125

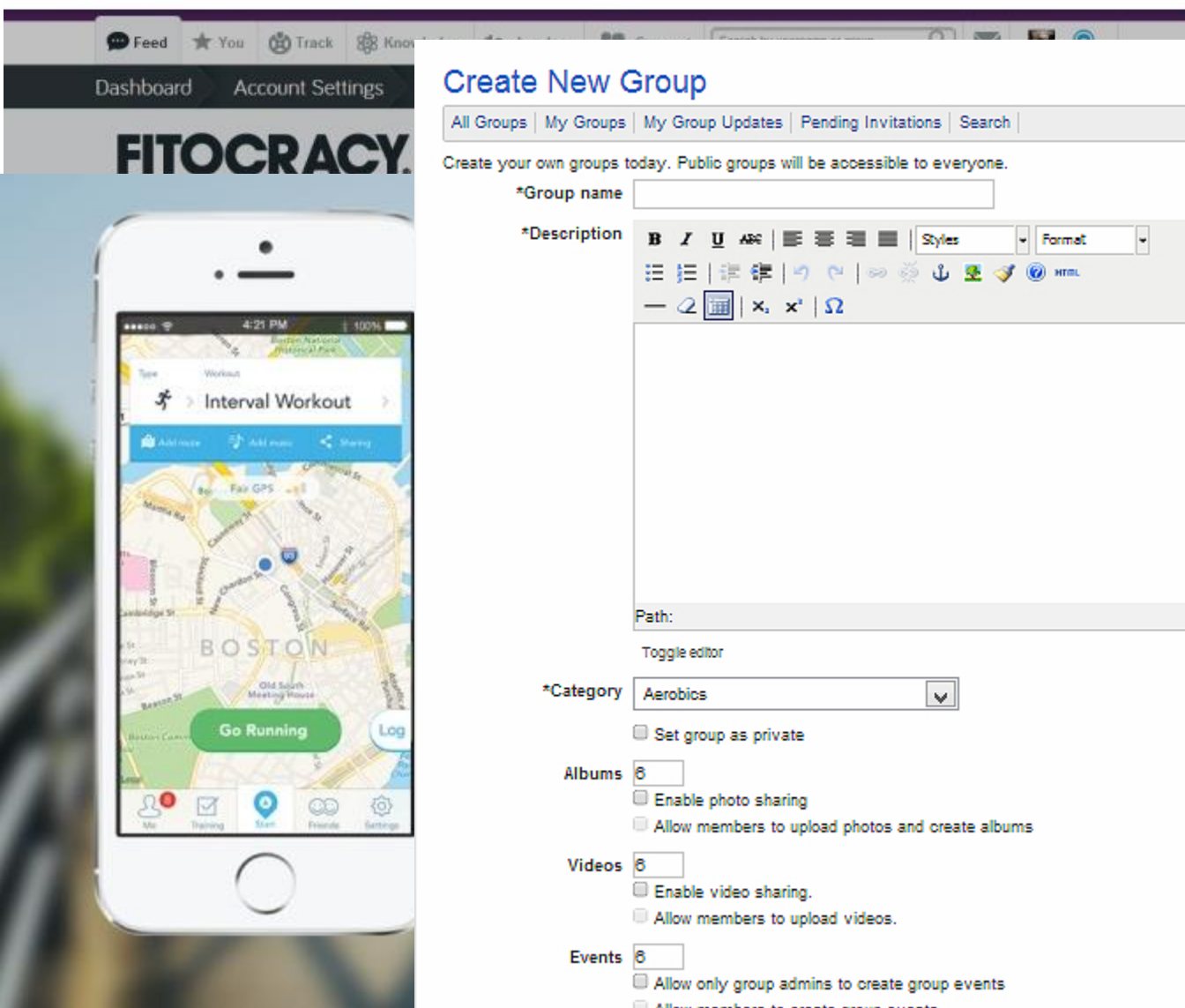
An Internet- and Mobile-Based Tailored Intervention to Enhance Maintenance of Physical Activity After Cardiac Rehabilitation: Short-Term Results of a Randomized Controlled Trial

Monitoring Editor: Gunther Eysenbach

Reviewed by Dori Steinberg, Alexis Beatty, and Philippa Howlett

[Konstantinos Antypas](#), RN, MSc^{1,2} and [Silje C Wangberg](#), DPsych, PhD^{3,4}

Connect physical activity partners



'patients like me'

← → ↻ PatientsLikeMe, Inc. [US] https://www.patientslikeme.com/conditions/219-chf-congestive-heart-failure/how-it-affects-people

My profile Patients What's new Forums **Conditions** Treatments Symptoms Research

Look up a condition

Overview

Community goals

How it affects people


How people treat it

Member journals

Who's New

Join the Heart, Blood, and Circulatory Forum

Conditions > CHF (Congestive heart failure) > How It Affects People

 **Update**
What's new? The "What's new" tab! Read more [here](#).

How CHF (Congestive heart failure) affects people Follow

Common symptoms	How bad it is	What people are taking for it
Fatigue		NatureMade Super B-Complex, Methylphenidate, Modafinil
Insomnia		Zolpidem, Trazodone, Diphenhydramine
Pain		Hydrocodone-Acetaminophen, Gabapentin, Tramadol
Anxious mood		Alprazolam, Clonazepam, Diazepam
Depressed mood		Duloxetine, Citalopram, Sertraline

Reports may be affected by other conditions and/or medication side effects. We ask about general symptoms (anxious mood, depressed mood, insomnia, fatigue, and pain) regardless of condition.

Last updated: October 2, 2014

● Severe ● Moderate ● Mild ● None

Connect physcial activity partners



J Med Internet Res. Jun 2014; 16(6): e153.

PMCID: PMC4090378

Published online Jun 16, 2014. doi: [10.2196/jmir.2674](https://doi.org/10.2196/jmir.2674)

Online Social Networks That Connect Users to Physical Activity Partners: A Review and Descriptive Analysis

Monitoring Editor: Gunther Eysenbach

Reviewed by Brie Turner-McGrievy and Eric Hekler

[Atul Nakhasi](#), BA,^{#1} [Album Xiaotian Shen](#), BS,^{#2} [Ralph Joseph Passarella](#), BS,¹ [Lawrence J Appel](#), MD, MPH,¹ and [Cheryl AM Anderson](#), MPH, MS, PhD^{✉3}

[Author information](#) ► [Article notes](#) ► [Copyright and License information](#) ►

Several major online social networks that connect users to physical activity partners currently exist and use standardized features to achieve their goals. Future research is needed to better understand how users utilize these features and how helpful they truly are.

2005 (vol. 7)
2004 (vol. 6)
2003 (vol. 5)
2002 (vol. 4)
2001 (vol. 3)
2000 (vol. 2)
1999 (vol. 1)

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





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Vill du översätta sidan? [Alternativ](#)

Översätt

Original Paper

A Web-Based Peer-Modeling Intervention Aimed at Lifestyle Changes in Patients With Coronary Heart Disease and Chronic Back Pain: Sequential Controlled Trial

Rebecca Schweier¹, MA ; Matthias Romppel², Dr rer med ; Cynthia Richter¹, Dipl-Soz ; Eike Hoberg³, MD 
; Harry Hahmann⁴, MD ; Inge Scherwinski⁵, MD ; Gregor Kosmützky⁶, MD ; Gesine Grande², Dr PH 

¹Faculty of Architecture and Social Sciences, University of Applied Sciences Leipzig (HTWK Leipzig), Leipzig, Germany

²Institute for Public Health and Nursing Research, Department Prevention and Health Promotion, Faculty 11: Human and Health Sciences, University of Bremen, Bremen, Germany

³Mühlenbergklinik Holsteinische Schweiz, Bad Malente-Gremsmühlen, Germany

⁴Klinik Schwabenland, Isny-Neutrauchburg, Germany

⁵MEDIAN Klinik Bad Lausick, Bad Lausick, Germany

⁶Reha-Zentrum Bad Driburg – Klinik Berlin, Bad Driburg, Germany

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Sök

Bläddra

Ladda upp

Skapa konto

Logga in

Heart Failure Patient After Adult Stem Cell Therapy

cellmedicine



83 videoklipp

Prenumerera



Förslag



Adult Stem Cells Used To Rebuild Heart Tissue /...

av rosaryfilms
14 402 visningar



Adult Stem Cells Success Stories Joe Davis

av StemCellFacts
7 728 visningar



Stem Cell Therapy for Type II Diabetes

av cellmedicine
12 477 visningar



Congestive Heart Failure

av bmedinago
93 295 visningar



Adult Stem Cell 8

Game computers?

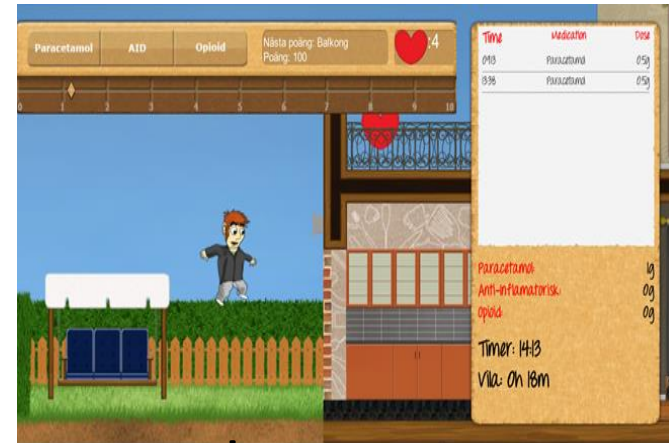
'Rehagames'

- Nintendo Wii
- Virtual walk
- Robotic therapy
- Memory games
- Virtual shopping mall



Study 4

Doctoral project Brynja Ingadottir (LiU)



Aim To explore if patients can learn about and change their self-care behaviour by using a serious game

Methods

Explorative pilot-study using multi-methods

Steps

- Literature review (ongoing)
- Design of a game prototype (1st version ready)
- Testing of the prototype (planned)

Wii

Increase and augment bodily movement.

Wii sports can get you moving, but there is not getting around it, you can cheat by simply moving the remote and not moving your body all that much. So why not go out of your way by adding in movement to your Wii Sports experience. For example, when you play Wii Tennis...



...Try jumping as high as you can whenever a high ball comes your way. Try adding in a lunge with your swing when the ball is slightly out of reach on screen? I am sure you could come up with some of your own ideas on how to add in some extra body movements to the normal tennis monotony of swinging a racket.

Create an Interval Experience

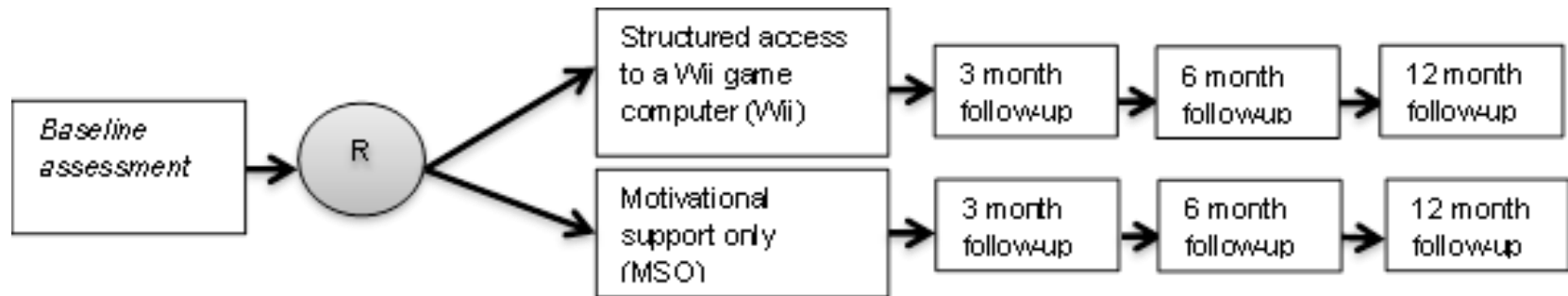
You burn more calories when you vary your heart rate and the intensity of exercise than when you run (workout) at a steady pace. So why not turn your Wii Sports experience into an interval training session. Wii



HF-Wii

RCT (clinicaltrial.gov NCT01785121)

HF-Wii.com



Concluding remarks

Internet and virtual reality are the future

Concluding remarks

Internet and virtual reality are **the now**

- Role for professionals :

Needed from professionals:

- **Open mind**
- **Safeguards**
- **Policy**
- **Open mind for input from patients (google generation)**
- **Look for 'new' solutions for 'old' problems**



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Porjucintepi Voila