MACOVA 2020

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BD


It's not that we need new ideas, but we need to stop having old ideas
Edwin Herber Land
The pace of change is so fast, that if you don't find a time to keep your eye on the future, you will have no chance of staying in touch with the present. *Dean Rusk*
« In life, there are not only solutions, there are forces in motion; they have to be created and the solutions follow. »
Antoine de Saint Exupery

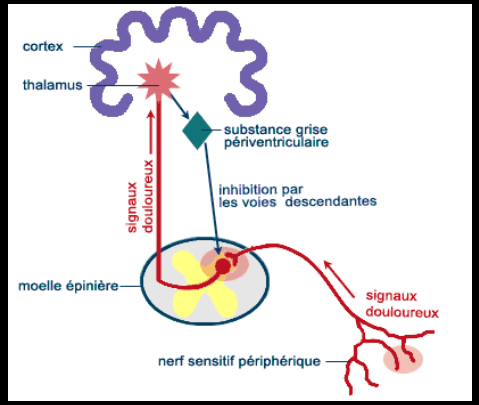
Digital Sedation

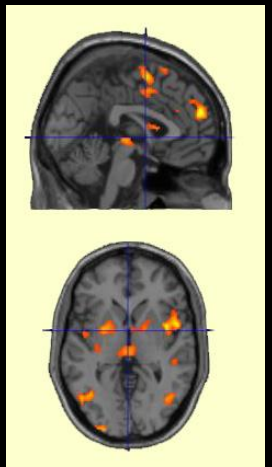
Edimbourg January 2020

H Rosay,
Centre Léon Bérard
Lyon
France

No links of interests

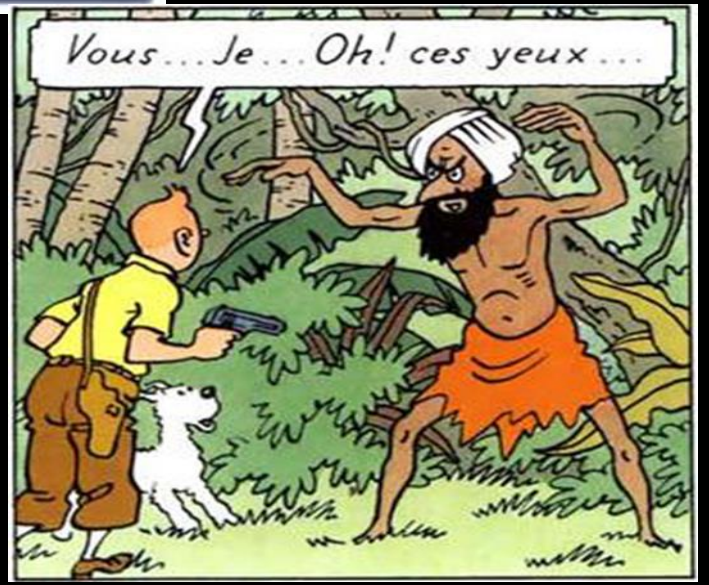
- Pain Perception is strongly influenced by sensitive psychological, cognitif, emotional factors
- Theory of the gate control; now « matrice control »





Attention

Distraction



CENTRE DE LUTTE CONTRE LE CANCER LEON BERARD

- Impact on perception of anxiety and pain
- Improve rehabilitation, experience of surgery

Hypnosis : Limits

Time
Education
Organization

Reduced proposition of care

Hypnosis: Virtual Re*ality*

Make that hypnosis become ACCESSIBLE and STANDARDISED

3 Dimensions Immersion

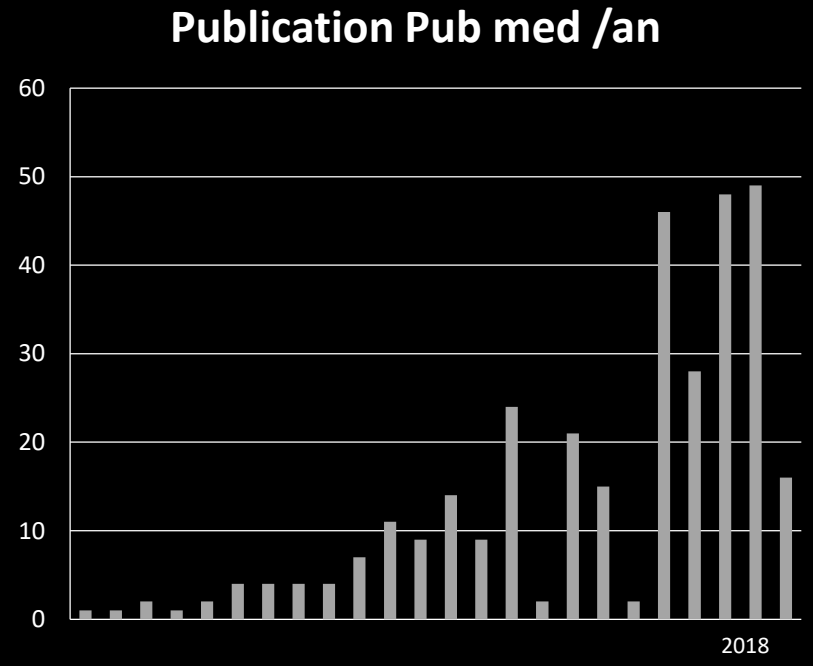
Subsitute imaginative stimuli

Increasing Using

Health: Increasing Using

- Psychiatry: phobia, anxious neurosis
- Cognitive and physical rehabilitation
- Chronical and acute pain
- Support care in oncology
- Nutritionnal Disorders.

- Teaching: Surgical Simulations , serious game



VR Virtual **Reality is a** computer technology that simulates the physical presence of the user in a virtual environment**.**

Augmented **reality** is the superposition of reality and elements (sounds, 2D, 3D images, videos, etc.) calculated by a computer system in real time

Virtual Environment-Immersion - Presence

Audiovisual Distraction

- Videogames
- TV, Touch pad, Computer, smartphone, Books….

Virtual Reality: Bibliography

- Poor
  Very small samples
  Patient disparity: age, pathology, intensity of pain, selection bias ...
  Disparity in procedures
  Devices disparity
  Disparities in assessments

3 reviews of literature

The Use of Virtual Reality and Audiovisual Eyeglass Systems as Adjunct Analgesic Techniques: A Review of the Literature

Andreas A.J. Wismeijer, M.A.
Autonomous University of Barcelona
Barcelona, Spain

Ad J.J.M. Vingerhoets, Ph.D.
Tilburg University
Tilburg, The Netherlands

(**Ann Behav Med** 2005, *30*(3):268–278)

The effectiveness of virtual reality distraction for pain reduction: A systematic review

Kevin M. Malloy, Leonard S. Milling *

University of Hartford, Department of Psychology, 200 Bloomfield Avenue, West Hartford, CT 06117, USA

Clinical Psychology Review 30 (2010) 1011–1018

Innovative Technology Using Virtual Reality in the Treatment of Pain: Does It Reduce Pain via Distraction, or Is There More to It?

Anita Gupta, DO, PharmD,* Kevin Scott, BS,*,† and Matthew Dukewich, PharmD†

Pain Medicine 2017; 0: 1–9
doi: 10.1093/pm/pnx109

The Effect of Visual Stimulation via the Eyeglass Display and the Perception of Pain

CYBERPSYCHOLOGY & BEHAVIOR
Volume 5, Number 1, 2002

MIMI M.Y. TSE, M.Sc.,[1] JACOBUS K.F. NG, M.B.Ch. B., FANZA, FHKCA, FHKRM (Anaes),[2] JOANNE W.Y. CHUNG, Ph.D.,[1] and THOMAS K.S. WONG, Ph.D.[1]

TABLE 1. THE EFFECT OF VISUAL STIMULI ON PAIN THRESHOLD AND PAIN TOLERANCE

	Subjects (n = 72), mean (SD)	*p value, mean (SD)*
Painful threshold (sec)		
With visual stimulation	187 (91)	0.000[a]
Without visual stimulation	123 (75)	
Pain tolerance (sec)		
With visual stimulation	380 (133)	0.000[a]
Without visual stimulation	271 (113)	

[a]Paired *t* tests were used. A *p* value of <0.05 was considered statistically significant.

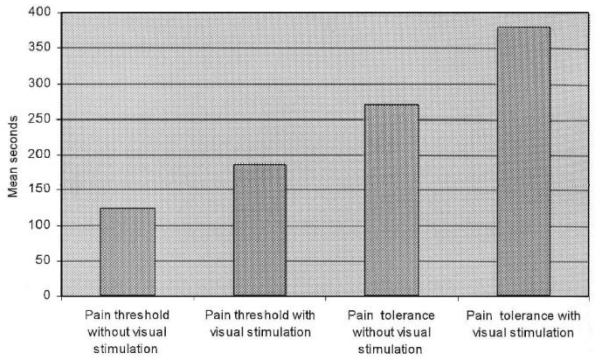


FIG. 3. The effect of visual stimuli generated by eyeglass display on pain threshold and pain tolerance.

The quality of the VR app influences immersion and the effect on pain

Experimental Pain:
Thermal Stimuli, Rien, 60°, 35°,

Snow world

Manipulating presence influences the magnitude of virtual reality analgesia

Hunter G. Hoffman[a,c,*], Sam R. Sharar[d], Barbara Coda[d], John J. Everett[a,b], Marcia Ciol[b], Todd Richards[c], David R. Patterson[b]

Pain 111 (2004) 162–168

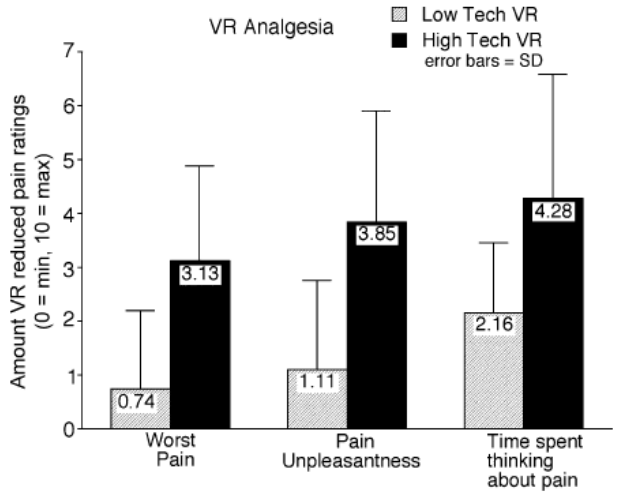


Fig. 2. The amount of VR analgesia in the Low Tech Group vs. the High Tech Group. VR analgesia is defined as the difference between baseline scores and scores during VR. Black bars and striped bars show means with SD shown as error bars.

The higher the quality of the app, the greater the effectiveness on pain

Virtual Reality as an Adjunctive Nonpharmacological Sedative During Orthopedic Surgery Under Regional Anesthesia: A Pilot and Feasibility Study

Peter Y. Chan, BSc, MBBS, FCICM,* and Simon Scharf, MBBS, FANZCA†

2017 Anesthesia & Analgesia

Snow world

Table. Summary of Demographic and Case Data From Routine Care and Intervention Groups

	Routine Care (n = 10)	IVR Therapy (n = 9)	P
Knee surgery	3 (15.8%)	3 (15.8%)	.711[a]
Hip surgery	6 (31.6%)	4 (21.0%)	
Other	1 (5.3%)	2 (10.6%)	
Age (y)	65 (57–76)	50 (36–66)	.142[b]
Sex	2 Male (10.6%)	2 Male (10.6%)	>.99[a]
	8 Female (42.1%)	7 Female (36.8%)	
Time of case (min)	120 (72–135)	125 (85–150)	.69[b]

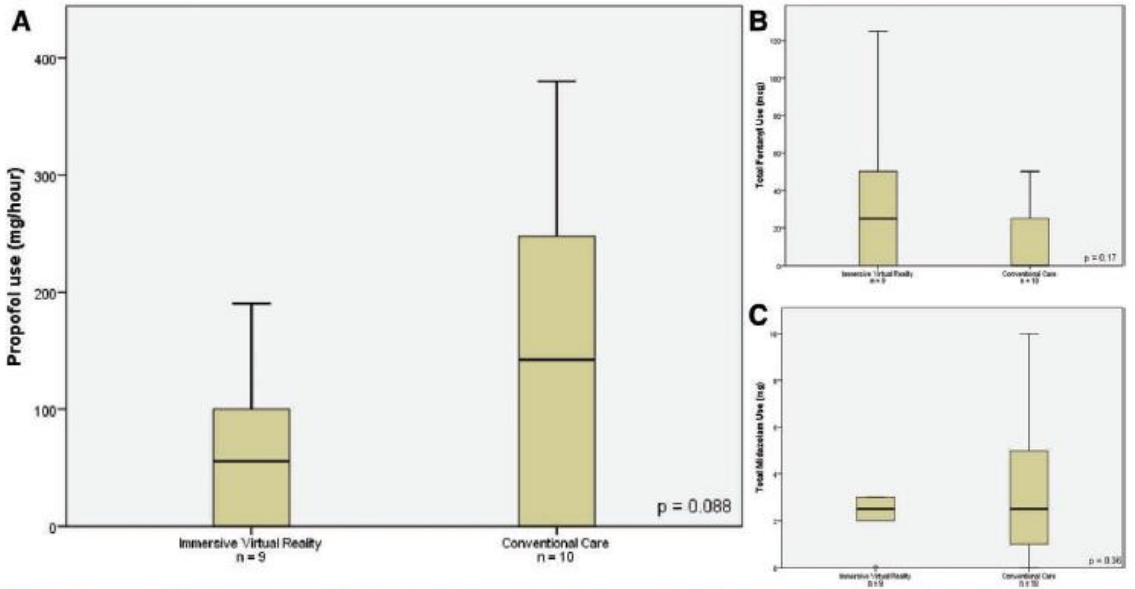
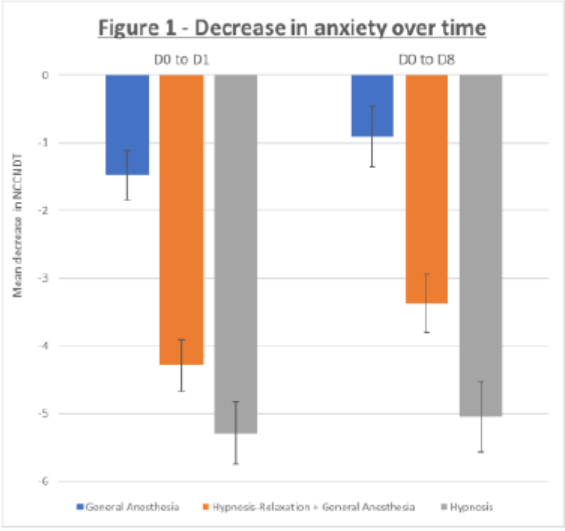


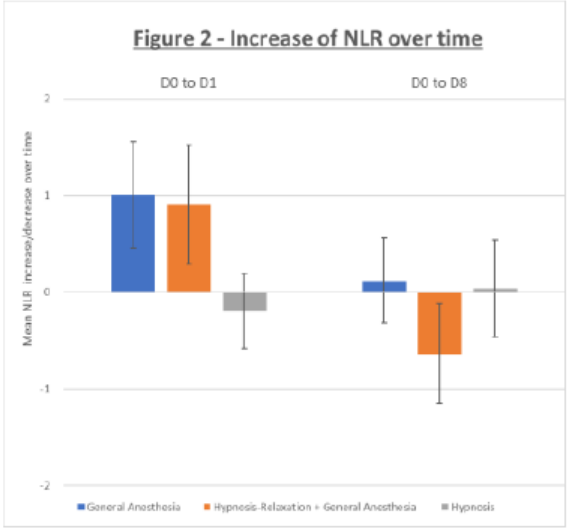
Figure. Average use of sedating medication in immersive virtual reality therapy and routine care groups. A, Propofol use per hour (mg/h), (B) total fentanyl use during case, (C) total midazolam use during case. *P* values given for results of the Student *t* test.

160. Hypnosis sedation can reduce inflammatory reaction associated with oncologic breast surgery, as measured by NLR (neutrophil-to-lymphocytes ratio)

M. Berlière, C. Maillard, N. Piette, F. Roelants, C. Watremez, M.A. Docquier, P. Forget , P. Piette, A. Gerday and F.P. Duhoux.
Breast Clinic, King Albert II Cancer Institute, Cliniques universitaires Saint-Luc

2017
Préliminairy
Results: 72
patients
Tumorectomy,
axillary nodes





Journal of
Clinical Medicine

Virtual Reality Distraction during Endoscopic Urologic Surgery under Spinal Anesthesia: A Randomized Controlled Trial

Jee Youn Moon [1,2], Jungho Shin [1], Jaeyeon Chung [1], Sang-Hwan Ji [1], Soohan Ro [1] and Won Ho Kim [1,2,*]

J. Clin. Med. 2019, *8*, 2; doi:10.3390/jcm8010002

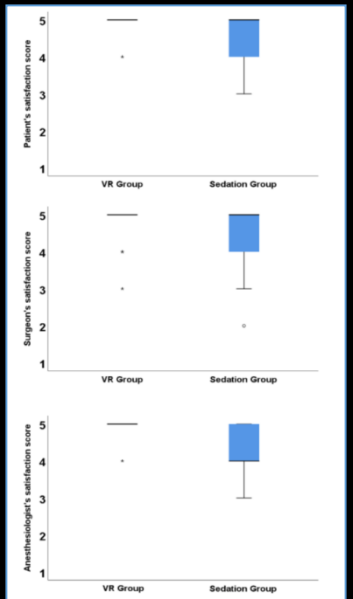


Table 3. Sedation-related characteristics.

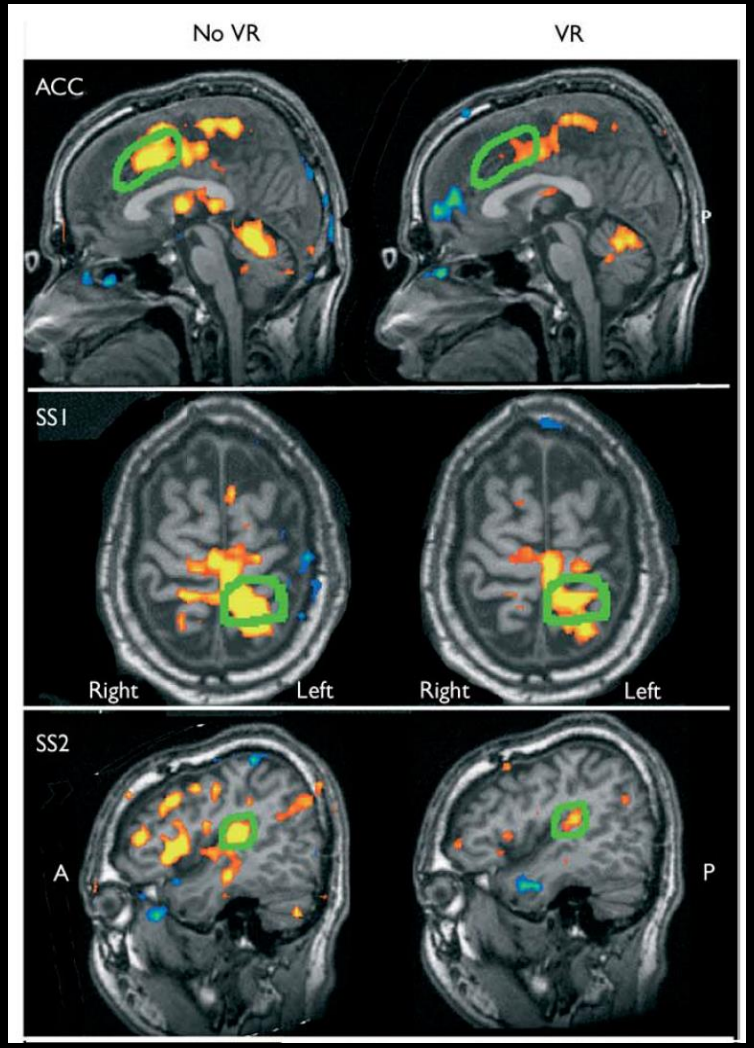
Variables	VR Group	Sedation Group	*p*-Value
Case number, *n*	18	19	
Intraoperative variables			
Patients who do not move involuntarily during surgery, *n*	16 (88.9)	13 (68.4)	0.001
Patients who requested to stop watching VR, *n*	0	-	
Midazolam administration, mg	4 (4–6)	-	
Administration of rescue sedative, *n*	0	0	
Desaturation (SpO_2 < 90%, more than 5 s), *n*	0	1 (5.3)	0.999
Apnea (flat $ETco_2$, more than 5 s)			
Develop, *n*	1 (5.6)	7 (36.8)	0.042

Modulation of thermal pain-related brain activity with virtual reality: evidence from fMRI

Hunter G. Hoffman,[CA] Todd L. Richards,[1] Barbara Coda,[2] Aric R. Bills,[4] David Blough,[3] Anne L. Richards[1] and Sam R. Sharar[4]

Table 1. The mean subjective pain (and fun) ratings during thermal pain stimulation with no virtual reality *vs* virtual reality (VR). Ranges of scores on a 0–10 scale are shown in parentheses.

	No VR	VR		p	MSE
Time spent thinking	8.06 (6–10)	4.50 (3–6)	$F(1,7)=51.81$	$p<0.001$	0.98
Pain unpleasantness	8.13 (7–9)	4.50 (3–6)	$F(1,7)=44.94$	$p<0.001$	1.17
Worst pain	7.50 (6–9)	5.23 (3–7)	$F(1,7)=20.25$	$p<0.005$	1.00
Fun	1.43 (0–4)	6.71 (4–8)	$F(1,6)=60.40$	$p<0.001$	1.62



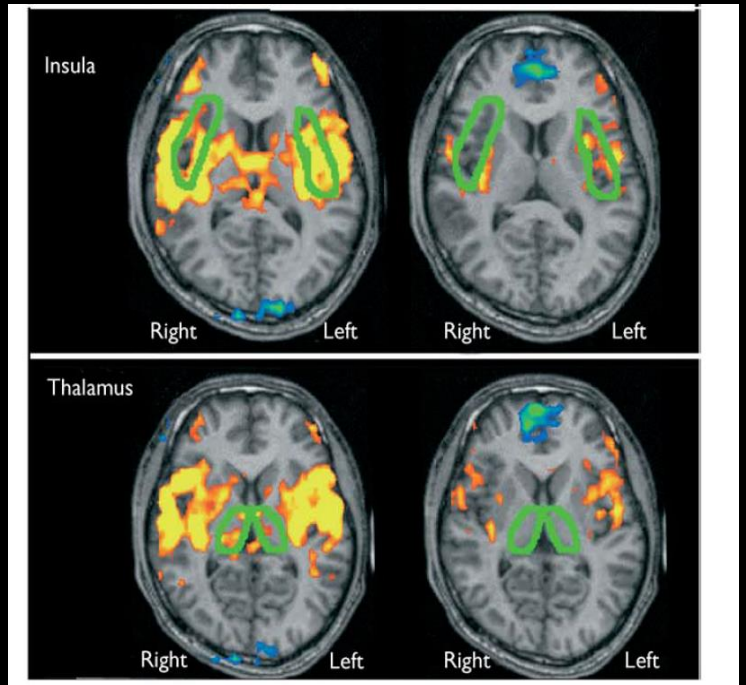


Fig. 1. fMRI group analysis showing no virtual reality for 3.5 min *vs* virtual reality for 3.5 min (n=8). The green line outlines the anterior cingulate cortex, primary somatosensory cortex, secondary somatosensory cortex, insula, and thalamus respectively (from top to bottom). The five images (one for each region of interest) on the left half of the figure represent brain activity during no virtual reality. The images on the right half of the figure show pain-related brain activity during virtual reality. Subjects showed a reduction in pain-related brain activity when in virtual reality.

The Analgesic Effects of Opioids and Immersive Virtual Reality Distraction: Evidence from Subjective and Functional Brain Imaging Assessments

(Anesth Analg 2007;105:1776–83)

Hunter G. Hoffman, PhD*†
Todd L. Richards, PhD†
Trevor Van Oostrom, MD‡
Barbara A. Coda, MD§
Mark P. Jensen, PhD‖
David K. Blough, PhD¶
Sam R. Sharar, MD‡

Table 1. Subjective Pain/Fun Assessments by Treatment Condition

Outcome variable	VR−/opioid−	VR+/opioid−	VR−/opioid+	VR+/opioid+
Worst pain intensity	8.28 (0.83)	5.94 (2.21)*	7.72 (1.86)	4.50 (1.87)*‡
Pain unpleasantness	8.56 (0.53)	5.33 (2.16)*	7.17 (1.60)†	4.05 (1.98)*‡
Time spent thinking about pain	8.72 (1.25)	4.56 (2.46)*	7.78 (1.79)	3.78 (1.72)*‡
Fun	0.56 (1.33)	6.56 (2.19)*	0.33 (0.50)	6.17 (3.04)*‡

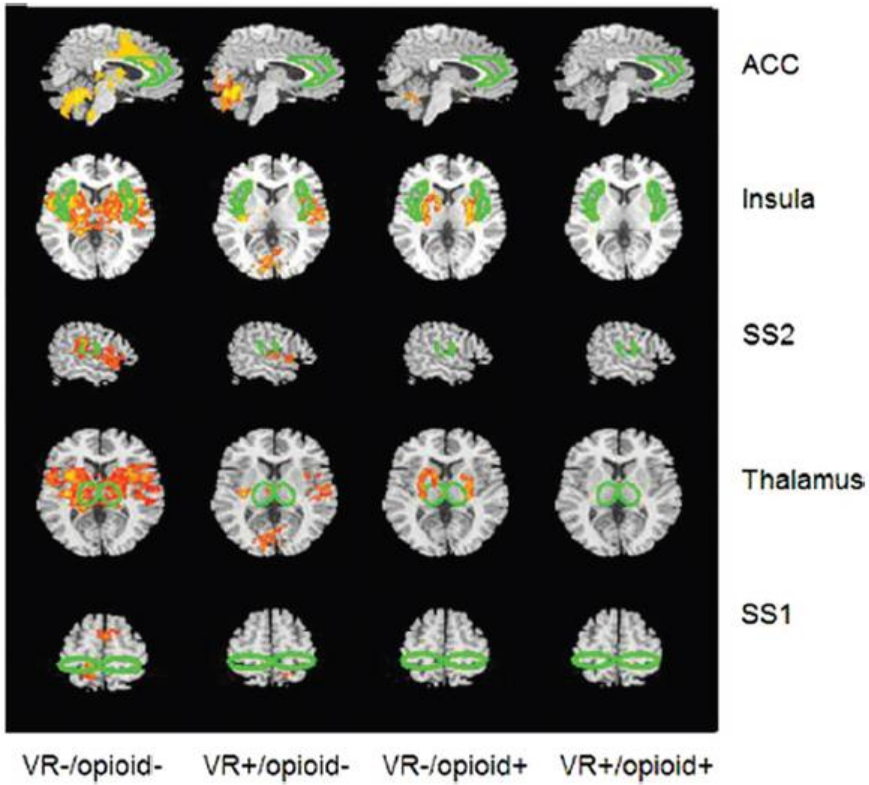
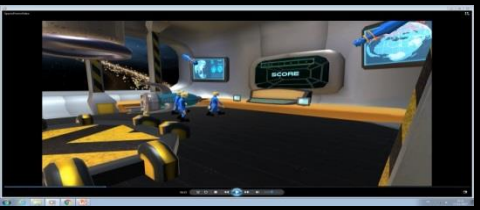
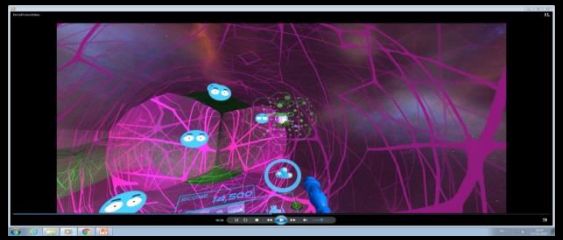


Figure 2. Summary of group functional magnetic resonance imaging (fMRI) results (n = 9 subjects) showing voxel maps of significant differences in voxels between "pain" and "no pain" conditions, for each of the four treatment conditions (control, VR only, opioid only, and combined VR + opioid). Regions of interest are outlined in green. Alone, VR and opioid each appear to attenuate pain-related neural activity in the five regions of interest, whereas the combination of VR+ opioid appears to further reduce pain-related activity compared with either treatment condition alone. VR = virtual reality distraction; ACC = anterior cingulate cortex; SS2 = secondary somatosensory cortex; SS1 = primary somatosensory cortex.

Table 2. Regional Pain-Related Brain Activity by Treatment Condition

Region of interest	VR−/opioid−	VR+/opioid−	VR−/opioid+	VR+/opioid+
ACC	3.24 (2.23)	1.61 (1.97)	2.13 (2.84)	0.72 (1.63)*
Insula	5.85 (1.10)	3.70 (2.32)*	3.56 (1.87)*	2.96 (1.89)†
SS2	4.31 (2.16)	2.09 (2.19)*	2.63 (1.82)	1.04 (1.97)†‡
Thalamus	4.83 (1.98)	2.63 (2.52)*	1.96 (1.74)*	0.62 (1.11)†§
SS1	3.48 (2.63)	2.87 (2.52)	3.07 (2.26)	2.48 (2.11)

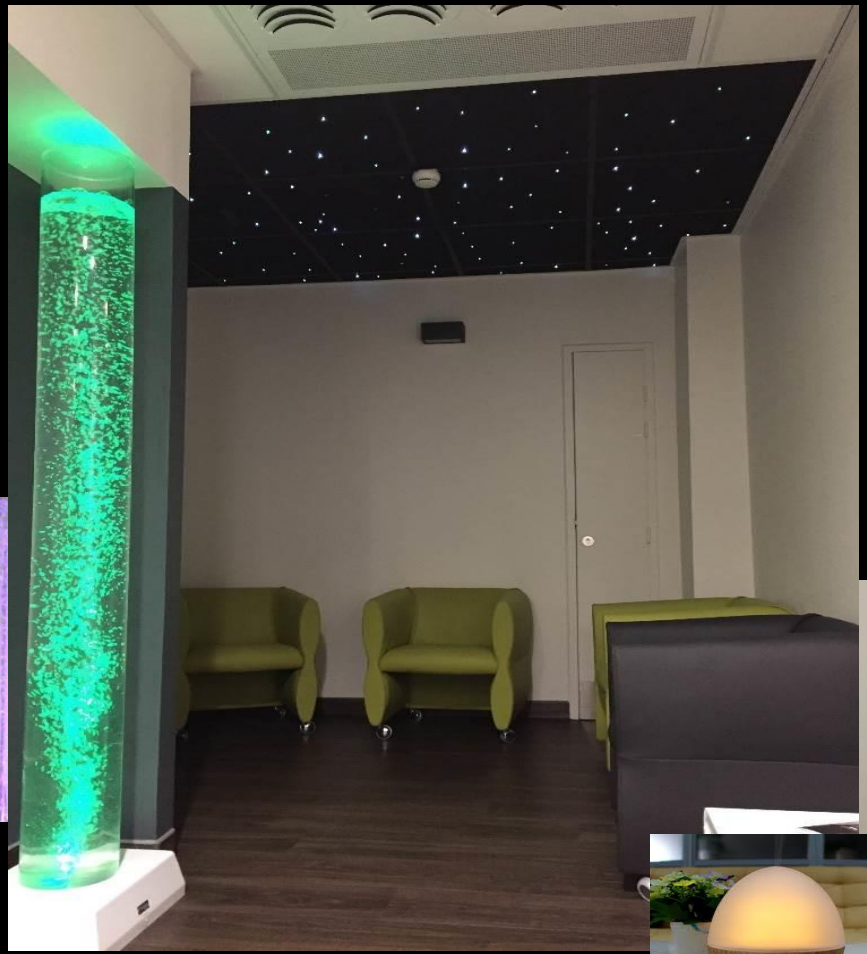




CENTRE DE LUTTE CONTRE LE CANCER LEON BERARD

CENTRE DE LUTTE CONTRE LE CANCER LEON BERARD


CENTRE DE LUTTE CONTRE LE CANCER
LEON BERARD



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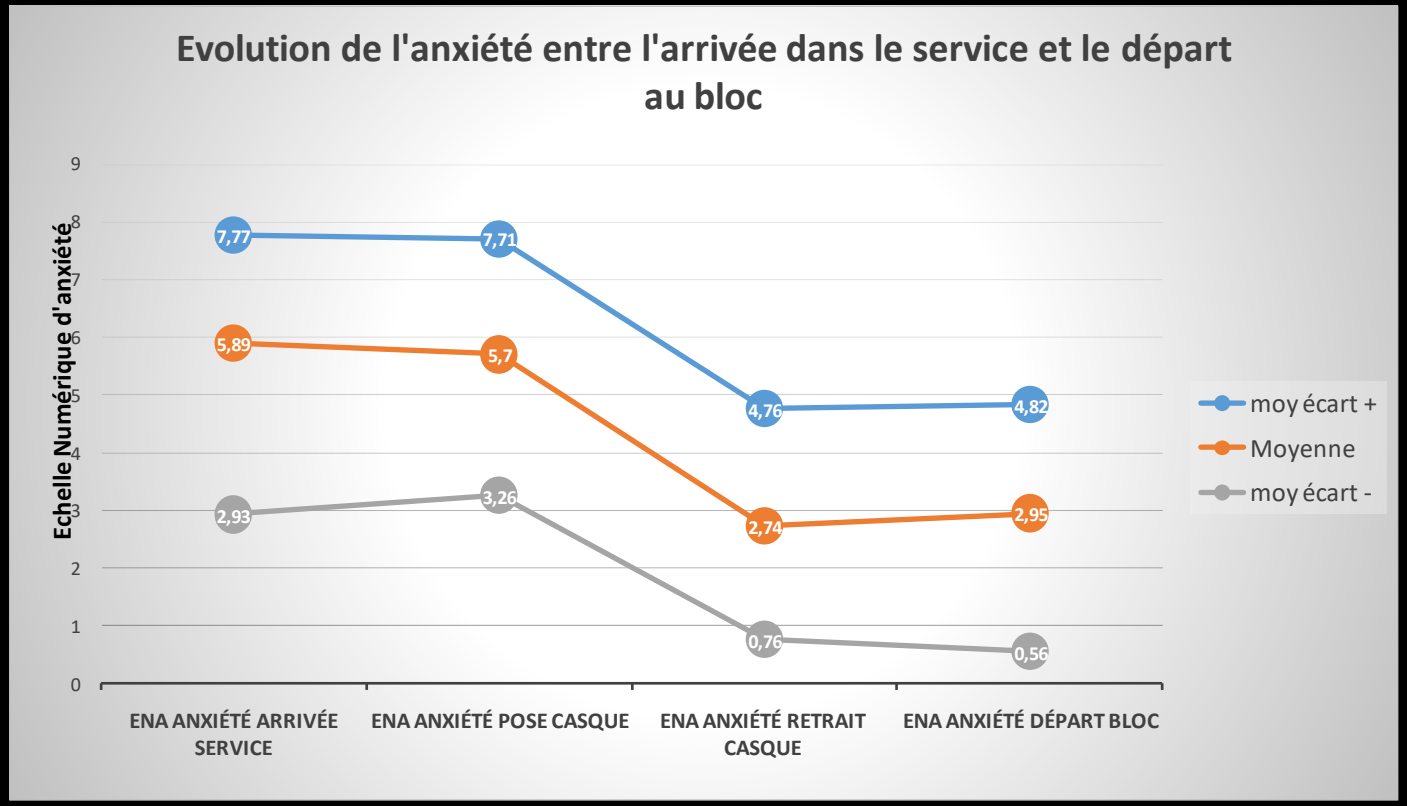
Anxiety evolution between arrival in unit and departure to the operating theater



Evaluation of the Standardized MUSIC CARE© App in the Treatment of Pain: *The U-Shape Composing Technique*

Stéphane Guétin[1,2,3], Daniela Falvay[4], Gérald Chanques[5], Samir Jaber[5], Sylvie de Lattre[5], Bruno Souche[5], Patrick Giniès[6], Marie-Christine Picot[7], Christian Hérisson[8], Luc Brun[9], Emmanuelle de Diego[10], Jacques Touchon[1]

Effets de la musicothérapie sur la douleur et l'anxiété des patients atteints de cancer hospitalisés et/ou suivis en service d'oncologie

Effects of music therapy on pain and anxiety in treating cancer patients: A feasibility study

Cécilia Jourt-Pineau[a,*], Stéphane Guétin[b], Lionnel Védrine[a], Sylvestre Le Moulec[a], Jean-Michel Poirier[a], Bernard Ceccaldi[a]

[a] *Service d'oncologie et radiothérapie, hôpital d'instruction des armées (HIA) du Val-de-Grâce, 74, boulevard de Port-Royal, 75230 Paris 05, France*
[b] *CMRR, Inserm U1061, service de neurologie, CHRU de Montpellier, 80, avenue Fliche, 34295 Montpellier, France*

Effects of music therapy in itensive care unit without sedation in weaning patients versus non-ventilated patients

S. Jaber[a,*], H. Bahloul[a], S. Guétin[b,c], G. Chanques[a], M. Sebbane[a], J.-J. Eledjam[a]

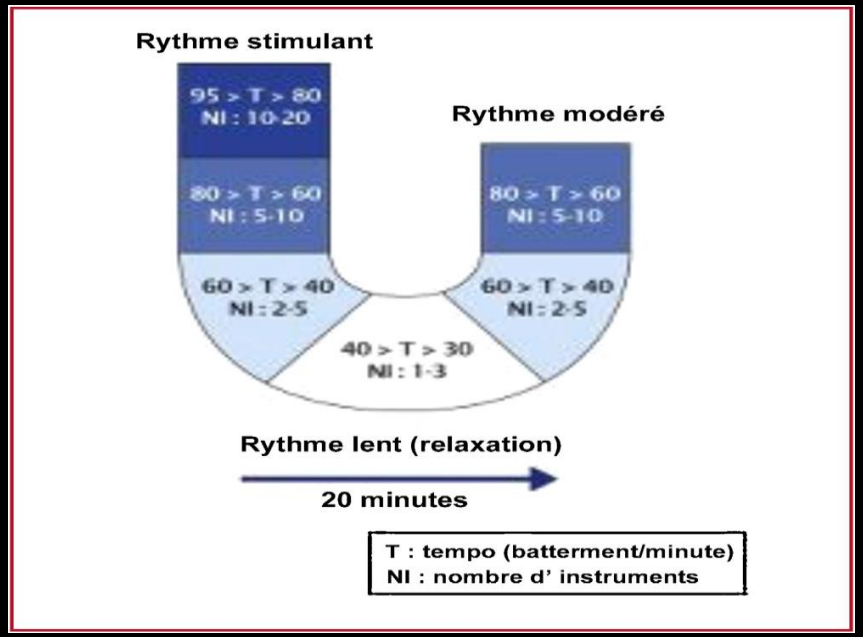
annales françaises d'ANESTHÉSIE et de RÉANIMATION

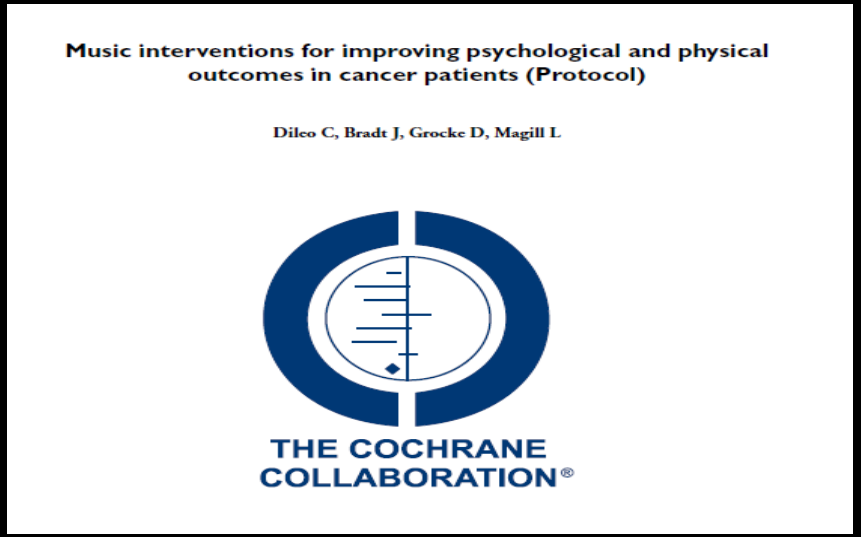
CENTRE HOSPITALIER TERRITORIAL GASTON-BOURRET
NOUVELLE-CALÉDONIE

Évaluation de la musicothérapie sur le stress et le *burnout* chez le personnel soignant

MUSIC CARE
LE SOIN PAR LA MUSIQUE

Musicotherapy - Music care





Take home message

Virtual therapy

- Virtual but today daily real
  Virtual but effective
  Integrated in the care process

Thanks !

herve.rosay@lyon.unicancer.fr

CENTRE DE LUTTE CONTRE LE CANCER LEON BERARD