

# Virtual reality

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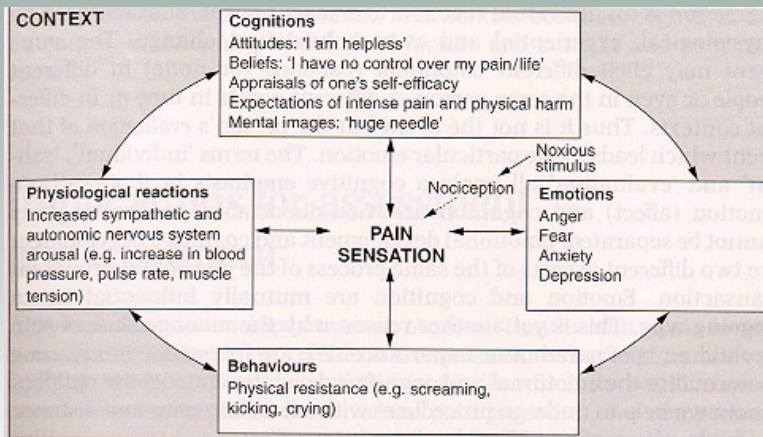


Figure 1.4: The cognitive model of paediatric pain. Adapted from Liossi C (1999) Management of paediatric procedure related cancer pain. *Pain Rev.* 6: 279–302.

## Procedurer

### Tandvård

Vid en kartläggning hade 35 % smärta vid tandvårdsbesöket (6-14 års ålder)

(Mares et al, 1997)

### Rutinvård

50 % av barn och ungdomar som genomgick blodprovstagning upplevde stress/smärta (Fradet et al 1990)

vaccinationer

diabetiker- insulininj./ kapillärstick

## Procedurer

### Onkologi

benmärgsaspiration

lumbalpunktion

kapillära prover

intramuskulära

injektioner

venpunktion

sårömläggning

### Brännskador

sårömläggning

## Procedurer

### Akutmottagning

injektioner  
såromläggning  
venpunktion  
kapillär provtagning  
venkateter

### Utredning

venpunktion  
röntgen  
klin. fys.  
biopsi

## Avledning

Engagera barnet så att det är helt koncentrerat på någonting utanför smärtan

Förändra barnets beteende så att de kan slappna av spända områden i kroppen

## En djungel eller ett smörgåsbord?

Såpbubblor

Andningsövningar

Aktivitetsleksaker

Handdockor

Avledning

Yoga

Djurlåda

Akupunktur

Guided Imagery

Musik

hantverk

Virtual reality

prata med barnet

böcker/tidskrifter spel

Avslappning

Kyla

Biofeedback

Labyrintspel

Distraction

Värme

information

positiv förstärkning

TV/video humor

## Alla personer är unika men finns något gemensamt?

En person född 1982 har under sin uppväxt

- spelat 10 000 dataspel
- skickat 250 000 e-mail
- sett 500 000 reklamfilmer
- mer än 20 000 timmar TV
- suttit mer än 10 000 timmar i mobiltelefon

(källa: Pulse projektet 2007-02-05)

# Virtual reality kan vara en effektiv metod men...

En konservativ spelindustri ("som Hollywood 1920")  
(satsar mer på försäljningsstatistik under december än medicinska ändamål)

Lite forskning om vilket spel?  
(som distraktion är spel bra, men går det att lära sig saker under procedurer?)

Lite forskning om vilken utrustning?  
(vill alla ha VR-glasögon?)

Kulturella skillnader?

## Avledning

### Passiva tekniker

### Aktiva tekniker

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Farmakologiska metoder - Saga - Musik - Film

TV-spel - Guided imagery – **Virtual reality**

## Virtual reality

Sluten VR?

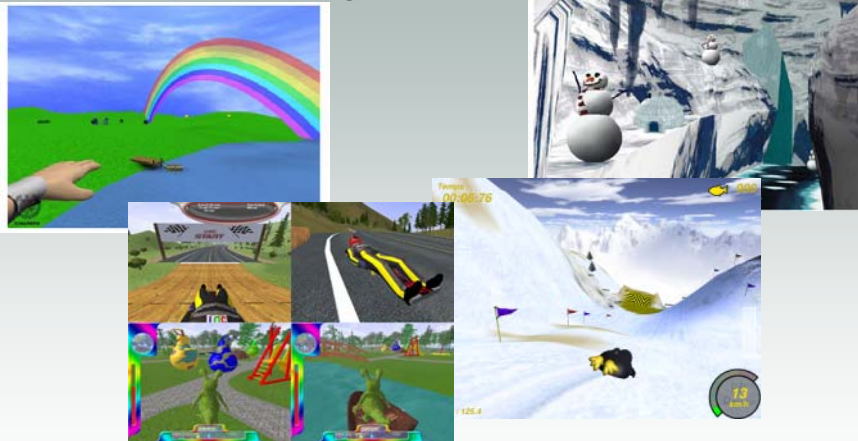


## Virtual reality

Öppen VR?



# Virtual reality Programvara?



## Virtual reality Forskning på barn

### Onkologi

Gershon J, Zimand E, Pickering M, Rothbaum BO, Hodges L. (2004). A pilot and feasibility study of virtual reality as a distraction for children with cancer. *J Am Acad Child Adolesc Psychiatry*. Oct;43(10):1243-9.

Sander Wint, S., Eshelmann, D., Steele, J., Guzzetta, C.E. (2002). Effects of distraction using virtual reality glasses during lumbar punctures in adolescents with cancer, *Oncology Nursing Forum* (1):E8-E15.

Windich-Biermeier, A., Sjöberg, I., Conkin Dale, J., Eshelman, D., Guzzetta, C.E. (2007). Effect of Distraction on Pain, Fear and Distress During Venous Port Access and Venipuncture in Children and Adolescents With Cancer. *Journal of Pediatric Oncology Nursing*, Jan-Feb;24(1):8-19.

### Brännskador

Das DA, Grimmer KA, Sparmon AL, McRae SE, Thomas BH.(2005). The efficacy of playing a virtual reality game in modulating pain for children with acute burn injuries: a randomized controlled trial *BMC Pediatr*. Mar 3;5(1):1.

Hoffman HG, Doctor JN, Patterson DR, Carrougher GJ, Furness TA 3rd. (2000). Virtual reality as an adjunctive pain control during burn wound care in adolescent patients. *Pain Mar*;85(1-2):305-9.

### Venpunktion

Gold J, Kim SH, Kant AJ, Joseph MH, Rizzo AS. (2006). Effectiveness of virtual reality for pediatric pain distraction during i.v. placement. *Cyberpsychol behav* 9(2):207-212.

# Virtual reality Framtid...

Vad skiljer kommersiella  
video games från  
psykologens VR?

## Distraction with a hand-held video game reduces pediatric preoperative anxiety

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### Summary

**Background:** Video games have received widespread application in health care for distraction and behavior modification therapy. Studies on the effect of cognitive distraction during the preoperative period, including, We evaluated the efficacy of an interactive distraction, a hand-held video game (VG) in reducing preoperative anxiety in children.

**Methods:** In a randomized, prospective study of 112 children aged 4-12 years undergoing outpatient surgery, anxiety was assessed after admission and again at mask induction of anesthesia, using the modified Yale Preoperative Anxiety Scale (mYPAS). Postoperative behavior changes were assessed with the Posthospital Behavior Questionnaire (PHBQ). Patients were randomly assigned to three groups: parent presence (PP), PP + a hand-held VG, and PP + 0.5 mg/kg<sup>-1</sup> and midazolam (MG) given >20 min prior to entering the operating room.

**Results:** There was a statistically significant increase in anxiety ( $P < 0.01$ ) in groups M and PP at induction of anesthesia compared with baseline, but not in VG group. VG patients demonstrated a decrease in anxiety from baseline (median change in mYPAS -3), the difference compared with PP (+11.9) was significant ( $P = 0.04$ ). The change in anxiety in the M group (+7.3) was not statistically different from other groups. Sixty-three percent of patients in VG group had no change or decrease in anxiety after treatment, compared with 26% in M group and 28% in PP group ( $P = 0.01$ ). There was no difference in anxiety changes between female and male patients.

**Conclusions:** A hand-held VG can be offered to most children as a low cost, easy to implement, portable, and effective method to reduce anxiety in the preoperative area and during induction of anesthesia. Distraction in a pleasurable and familiar activity provides anxiety relief, probably through cognitive and motor absorption.

**Keywords:** video games; pediatric anxiety; distraction; midazolam; parental presence; ambulatory surgery



# Virtual reality Framtid...

Vad krävs det för  
teknik och pengar?



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Available online at www.sciencedirect.com

## Virtual Reality Helmet Display Quality Influences the Magnitude of Virtual Reality Analgesia

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**Abstract:** Immersive Virtual Reality (VR) distraction can be used in addition to traditional opioids to reduce procedural pain. The current study explored whether a High-Tech-VR helmet (ie, a 60-degree field-of-view head-mounted display) reduces pain more effectively than a Low-Tech-VR helmet (a 35-degree field-of-view head-mounted display). Using a double-blind between-groups design, 77 healthy volunteers (no patients) aged 18-23 were randomly assigned to 1 of 3 groups. Each subject received a brief baseline thermal pain stimulus, and the same stimulus again minutes later while in SnowWorld using a Low-Tech-VR helmet (Group 1), using a High-Tech-VR helmet (Group 2), or receiving no distraction (Group 3, control group). Each participant provided subjective 0-10 ratings of cognitive, sensory, and affective components of pain, and amount of fun during the pain stimulus. Compared to the Low-Tech-VR helmet group, subjects in the High-Tech-VR helmet group reported 34% more reduction in worst pain ( $P < .05$ ), 46% more reduction in pain unpleasantness ( $P = .001$ ), 25% more reduction in "time spent thinking about pain" ( $P < .05$ ), and 32% more fun during the pain stimulus in VR ( $P < .05$ ). Only 29% of participants in the Low-Tech helmet group, as opposed to 65% of participants in the High-Tech-VR helmet group, showed a clinically significant reduction in pain intensity during virtual reality. These results highlight the importance of using an appropriately designed VR helmet to achieve effective VR analgesia (see www.vrain.com).

**Perspective:** Pain during medical procedures (eg, burn wound care) is often excessive. Adjunctive virtual reality distraction can substantially reduce procedural pain. The results of the current study show that a higher quality VR helmet was more effective at reducing pain than a lower quality VR helmet.

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**Key words:** Virtual reality, presence, analgesia, distraction, attention.





## Psychological interventions for needle-related procedural pain and distress in children and adolescents (Review)

Uman LS, Chambers CT, McGrath PJ, Kisely S

This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2006, Issue 4

### *Virtual Reality*

Only one study with 30 participants provided data on the impact of virtual reality on self-reported pain. While the SMD was negative (-0.29), the CI fell into the positive range (-1.02 to 0.43; see 'Comparison 04-01'). Given that this outcome was based on only one small study, definitive conclusions regarding the efficacy of Virtual Reality for reducing pain and distress during needle procedures cannot be made until further trials are conducted and a broader range of outcomes are assessed (please see 'Table 05').

## Virtual reality

### Pågår i Göteborg

- Diamantjakten
- Öppen VR
- Prova under olika procedurer inom barnonkologi
- Utvärdera
  - CAS/FAS
  - FLACC
  - Puls
  - Intervju

# Virtual reality

Hösten 2007

- Penguin race
- Öppen VR
- Prova under brännskador
- Utvärdera
  - CAS/FAS
  - FLACC
  - Puls
  - Intervju
  - ...

Tack för uppmärksamheten!