

# Trauma TIPS

A brief web-based early intervention to prevent PTSD in injured trauma patients: Preliminary results

Joanne Mouthaan, MSc

Marit Sijbrandij, PhD

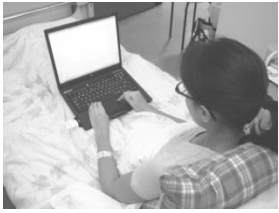
Miranda Olf, PhD

Berthold Gersons, MD PhD

Academic Medical Center Amsterdam

The Netherlands





# Traumatic injury & PTSD

- 990,000 ED treatments of traumatic injury between 1999-2003 *(www.rivm.nl)*
- Increased risk of developing psychiatric disorders\*:
  - 17-19% Posttraumatic Stress Disorder (PTSD)
  - 15-37% other anxiety disorder
  - 14-17% depressive disorder
- High co-morbidity\*: 25% > 1 psychiatric disorder

*(\*Yehuda, McFarlane, & Shalev, 1998; Shalev et al., 1998)*



# Early interventions for traumatic injury patients

- Design early intervention in compliance with current guidelines for trauma survivors

*(NICE, 2005; Impact, 2007)*

- No trauma-focus or emphasis on remembering details of the event or reliving emotions during the event
- Basic needs first
- Information aimed at resilience and positive coping, and on where to find help when needed
- Stimulate seeking support in one's social network
- Low-threshold, voluntary
- Incorporate CBT techniques



# Internet as a medium for mental health care interventions

- Following traumatic event: practical difficulties in care delivery to those in need
- Especially the case for early interventions: narrow time window for prevention of PTSD (< 1 month after traumatic event)
- Advantages of the Internet:
  - Broader dissemination through ease of access
  - Interactive nature allows for tailoring of interventions
  - Access to programs in user's preferred place and time
  - Evidence for success of Internet treatments for Axis-I disorders

*(Spek, et al., 2006; Pull, 2006)*



# Internet interventions for trauma survivors

- Predominantly *curative* Internet treatments
  - “*Interapy*” = 5-wk therapist-assisted, ten 45-minute writing sessions  
(Lange, et al., 2003; Knaevelsrud, & Maercker, 2007)
  - 8-wk self-help program for mild PTSD symptoms, no therapist feedback  
(Hirai, & Clum, 2005)
  - family problem solving therapy to reduce anxiety and depression in parents of a child with traumatic brain injury  
(Wade et al., 2005)
  - “*DE-STRESS*” = 8-wk therapist-assisted stress inoculation training program for trauma survivors  
(Litz, et al., 2007)
- Ruggiero, et al. (2006): *preventive* Internet-intervention to provide mental health resources after disaster/terrorist attack
  - feasible for further study, no effectiveness data yet



# Trauma TIPS: brief web-based early intervention

“The Incidence of Post-trauma psychopathology Study”

## Goal:

- Develop innovative early intervention to prevent PTSD among injured trauma patients

## Expected outcomes:

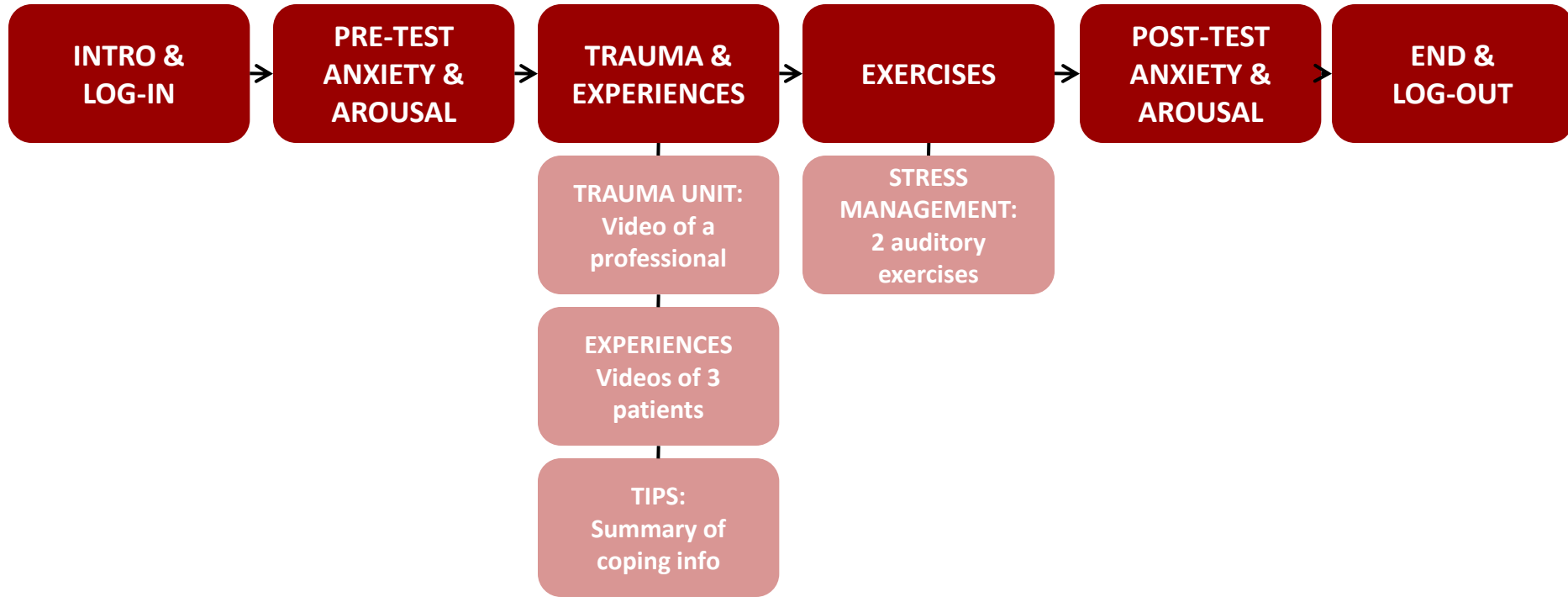
- Short-term: decrease acute distress
- Long term: prevention of symptoms of PTSD

## Why multimedia?

- No emphasis on expressing emotions
- Voluntary, patient takes initiative
- Easily accessible at home and in hospital
- Intervention can be repeated if patient wishes



# Structure Trauma TIPS-program



[www.traumatips.nl](http://www.traumatips.nl)

# Trauma Tips

Navigational bar



**Introductie** ▶ Vragen 1 ▶ Trauma ▶ Oefeningen ▶ Vragen 2 ▶ Tot slot ▶ Forum

## Introductie

Aim of intervention



### Welkom bij het Trauma TIPS internet programma.

Dit programma is speciaal bedoeld voor mensen die zijn behandeld op de Trauma Unit van het AMC of het VUmc in Amsterdam na een ongeval of een ander ingrijpend voorval. Met dit programma willen wij u informeren over de psychische gevolgen van het meemaken van een ingrijpende gebeurtenis. Ook geven we praktische tips voor de eerste periode na zo'n ingrijpende gebeurtenis.

Om het programma te starten vult u hieronder de aanmeldnaam die u van de onderzoeker hebt gekregen.

Aanmeldnaam

Aanmelden

[Aanmeldnaam kwijt?](#)

Instructions



Om het programma te doorlopen, klikt u telkens op de knop **VERDER** onderaan de bladzijde. Op elke nieuwe pagina ziet u een instructie van de programma-onderdelen. Als u een pagina terug wilt gaan, klikt u op **TERUG**.

Voor dit programma is een Active-x besturingsprogramma nodig. Mocht u bovenin uw scherm een balk zien met de volgende tekst: "Deze website wil deze invoegtoepassing uitvoeren", klikt u dan met de rechter muisknop op de balk en volg de instructies.

Verder ▶





# Main elements

## 1. Information



2. Modeling

3. Exposure

4. Social support

5. Relaxation

1. Video of chief trauma surgeon:
  - introduce patients to the program
  - reassurance, picking up normal routine
2. Videos of 3 patients about coping with the aftermath of trauma:
  - transferring knowledge on successful coping strategies and promoting recovery
3. Short textual summary of the information from patient videos
4. Information where to seek contact if symptoms remain



# Main elements

1. Information

**2. Modeling**



3. Exposure

4. Social support

5. Relaxation

1. Modeling by 3 patients
2. Age, gender and traumatic event based on trauma registry records
3. Commonalities in videos:
  - information on successful coping after traumatic injury
  - engaging in activities to reduce avoidance behavior
  - emphasis on re-entry in normal routine, constructive behaviour



# Main elements

1. Information
2. Modeling
- 3. Exposure**
4. Social support
5. Relaxation



*in vivo* exposure as narrative information from the patient models:

- explaining how they gradually encountered activities and situations that provoked anxiety
- *in vivo* exposure tips visually shown by the models
- together with the modeling technique, the aim is to stimulate patients to pick up their normal routine and to prevent avoidance behavior



# Main elements

1. Information
2. Modeling
3. Exposure
- 4. Social support** →
5. Relaxation

Promoting social support as integral part of intervention

- social support in patient videos as a successful coping strategy
- textually in the form of coping tips
- forum at the end of intervention for peer support



# Main elements

1. Information
2. Modeling
3. Exposure
4. Social support

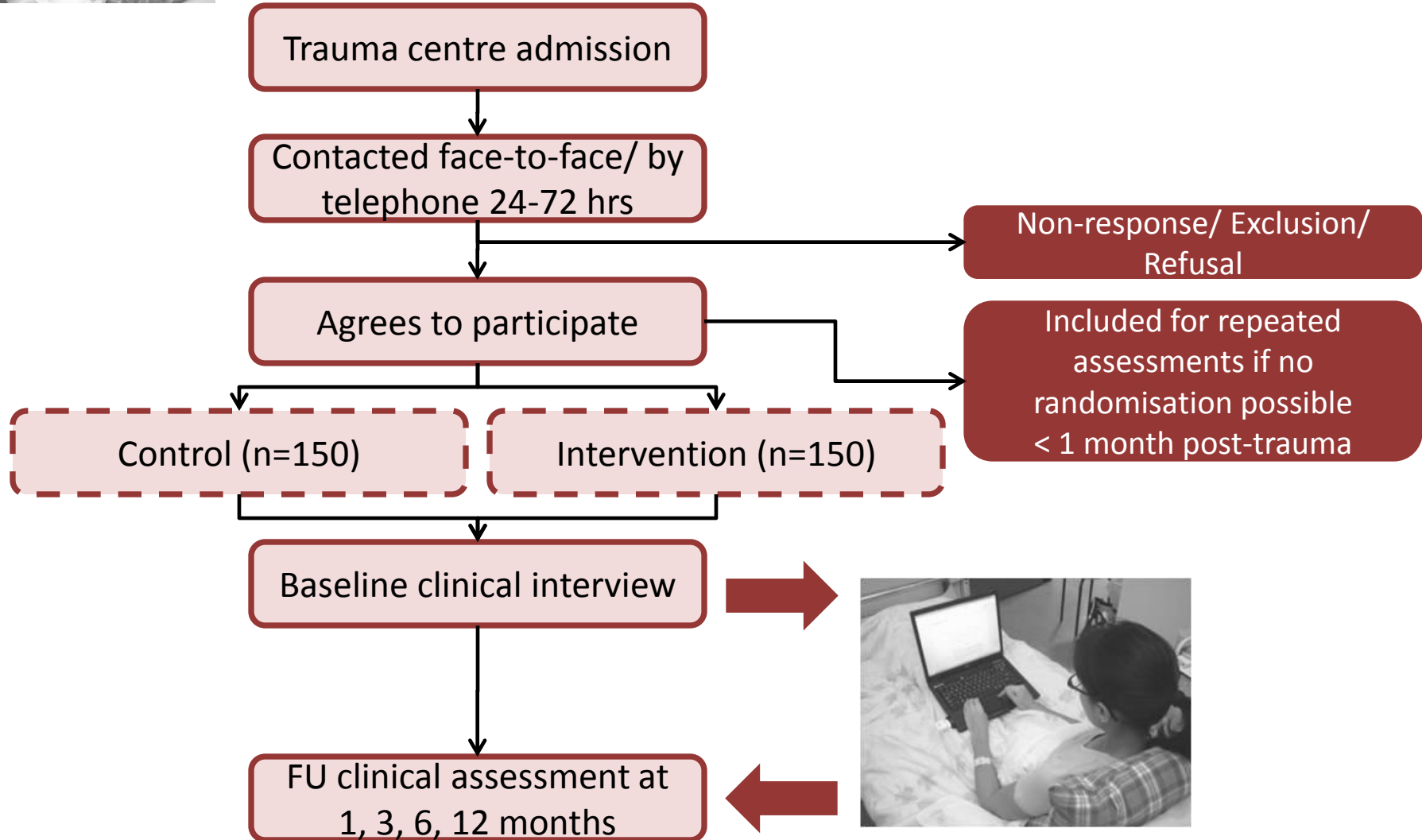
## 5. Relaxation



- 2 audio clips of 7 minutes with instructions for stress management techniques (relaxation and breathing retraining exercises)
- Aim is to decrease acute distress levels and help patients regain a sense of control



# Design RCT Trauma TIPS





# Method: Patients

- Patients consecutively included from Sept. 2007-Feb. 2009
- Included:
  - adult patients of Level I trauma center
  - intentional (physical assault) and unintentional (traffic/work-related acc.) injuries
  - traumamechanism according to A1-criterion for PTSD (DSM-IV-R)
- Excluded:
  - self-inflicted injuries
  - non-Dutch speaking
  - psychotic symptoms or disorder, high suicide risk
  - organic disorder or cognitive impairment
  - physically or cognitively unable to perform intervention
- Oral and written informed consent prior to data collection



# Assessments

| Outcomes                         | Instruments | Baseline | 1 month | 3 months |
|----------------------------------|-------------|----------|---------|----------|
| <b><i>Self-report</i></b>        |             |          |         |          |
| PTSD                             | IES-R       | X        | X       | X        |
| Anxiety                          | HADS-A      | X        | X       | X        |
| Depression                       | HADS-D      | X        | X       | X        |
| <b><i>Clinical diagnosis</i></b> |             |          |         |          |
| PTSD                             | CAPS        | -        | X       | X        |
| Anxiety                          | MINI        | X        | X       | X        |
| Depression                       | MINI        | X        | X       | X        |

*Note:* CAPS= Clinician Administered PTSD Scale, IES-R= Impact of Events Scale Revised, MINI= MINI International Neuropsychiatric Interview, HADS-D= Hospital Anxiety and Depression Scale (Depression subscale), HADS-A= Hospital Anxiety and Depression Scale (Anxiety subscale)





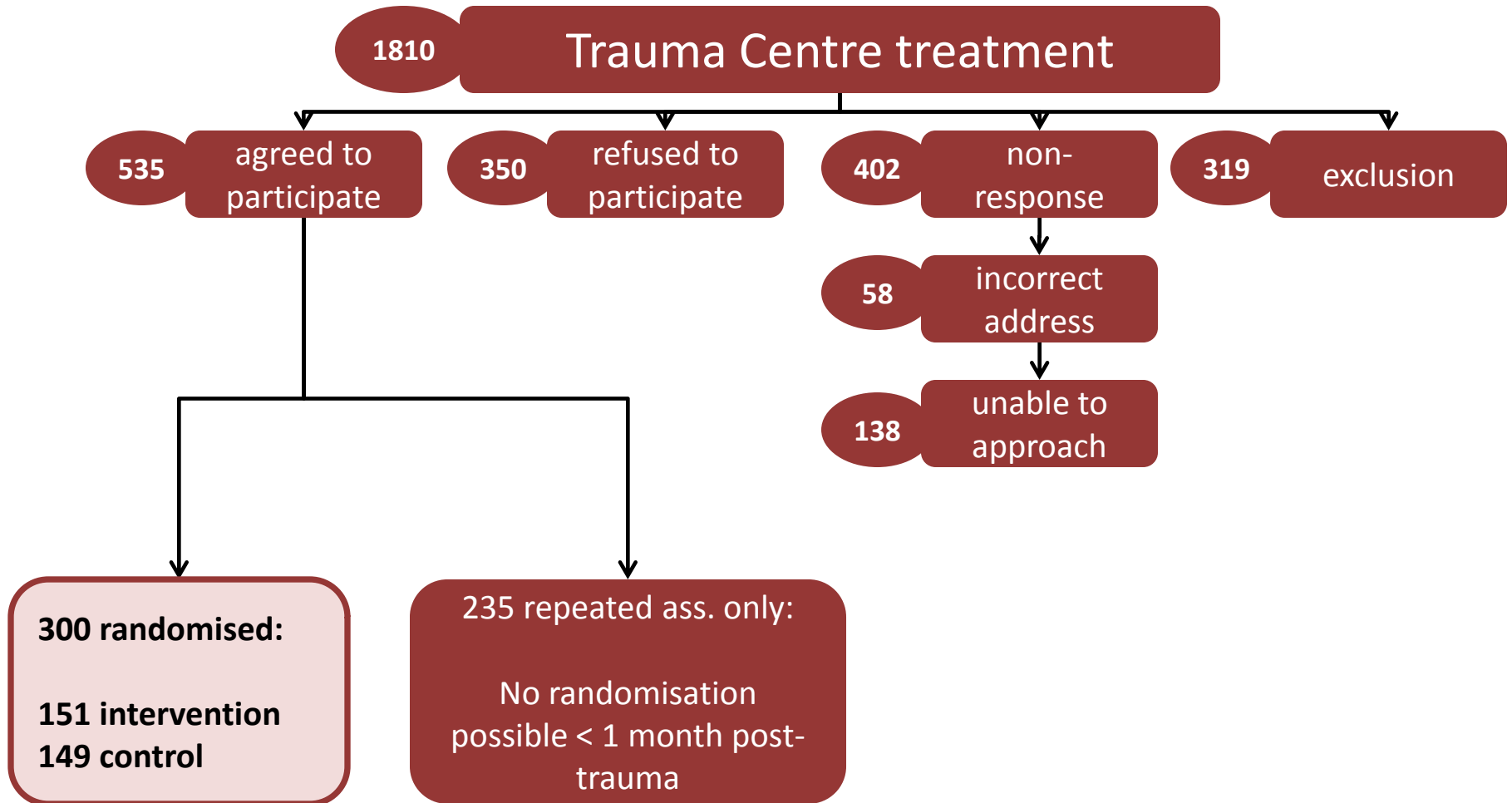
# Analyses

Repeated measurement analysis:

- Linear mixed model with unstructured covariances matrix
- Model: **group + time + group x time + baseline**
- Baseline is covariate
- Time as categorical variable
- Intent-to-treat



# Results: inclusion





# Demographic characteristics

|                    |                    | <b>Control<br/>(n=149)</b> | <b>Intervention<br/>(n=151)</b> | <b>Total<br/>(N=300)</b> | <b>P</b>  |
|--------------------|--------------------|----------------------------|---------------------------------|--------------------------|-----------|
| Age                | M (SD)             | 43.7 (16.0)                | 44.0 (15.7)                     | 43.8 (15.8)              | <i>ns</i> |
| Male sex           |                    | 91 (61.1%)                 | 89 (58.9%)                      | 180 (60.0%)              | <i>ns</i> |
| Married/cohabiting |                    | 96 (64.4%)                 | 100 (66.7%)                     | 196 (65.6%)              | <i>ns</i> |
| Educational level  |                    |                            |                                 |                          | <i>ns</i> |
|                    | < 4 yrs highschool | 43 (29.1%)                 | 40 (26.8%)                      | 83 (27.9%)               |           |
|                    | 5-6 yrs highschool | 62 (41.9%)                 | 72 (48.3%)                      | 134 (48.3%)              |           |
|                    | College/University | 43 (29.1%)                 | 37 (24.8%)                      | 80 (26.9%)               |           |
| Country of origin: | NL                 | 122 (83.0%)                | 126 (84.6%)                     | 248 (83.8%)              | <i>ns</i> |



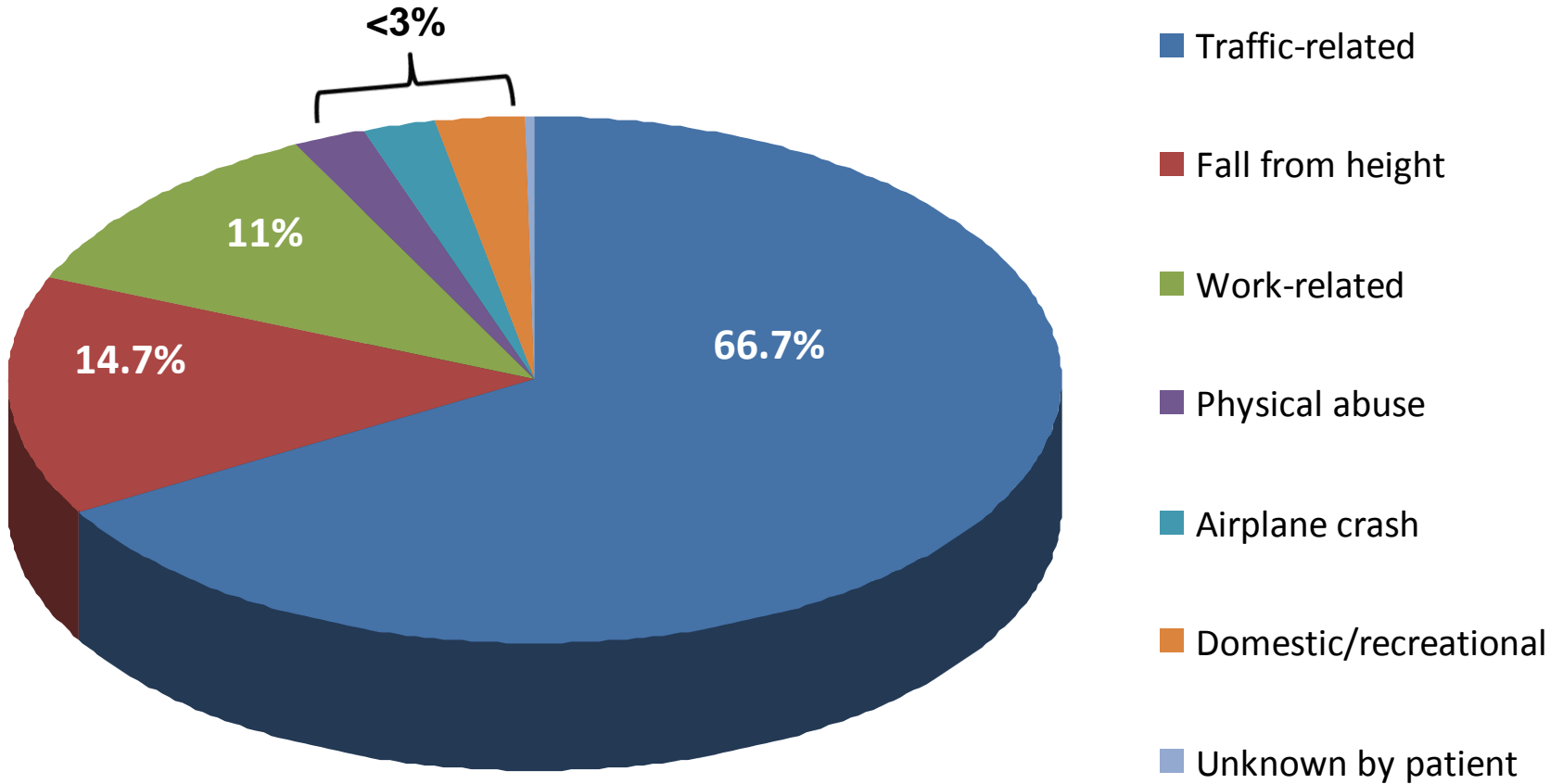
# Trauma-related characteristics

|              |                     | Control<br>(n=149) |             | Intervention<br>(n=151) |  | Total<br>(N=300) |             | <i>P</i> |
|--------------|---------------------|--------------------|-------------|-------------------------|--|------------------|-------------|----------|
| ISS:         | M (SD)              | 9.1 (8.7)          | 11.0 (8.7)  | 10.0 (8.8)              |  |                  | <b>.025</b> |          |
|              | 16+ (severe)        | 20 (18.5%)         | 28 (27.7%)  | 48 (23.0%)              |  |                  |             |          |
| GCS:         | M (SD)              | 14.7 (1.5)         | 14.6 (1.4)  | 14.7 (1.5)              |  |                  | <i>ns</i>   |          |
|              | 13+ (mild TBI)      | 106 (96.4%)        | 106 (94.6%) | 212 (95.5%)             |  |                  |             |          |
|              | 9-12 (moderate TBI) | 2 (1.8%)           | 4 (3.6%)    | 6 (2.7%)                |  |                  |             |          |
|              | ≤8 (severe TBI)     | 2 (1.8%)           | 2 (1.8%)    | 4 (1.8%)                |  |                  |             |          |
| Hospitalised |                     | 101 (68.2%)        | 98 (64.9%)  | 199 (66.6%)             |  |                  | <i>ns</i>   |          |
| No. days     | M (SD)              | 5.9 (11.5)         | 5.5 (8.0)   | 5.7 (9.9)               |  |                  |             |          |

Note: ISS=Injury Severity Score (range 0-75; Baker, et al., 1974); GCS=Glasgow Coma Score (range 0-15; Teasdale, & Jennett, 1974)



# Traumatic event





# Log-in characteristics

|                       |        | Total |         | < 1 month |         | < 1st follow-up |         |
|-----------------------|--------|-------|---------|-----------|---------|-----------------|---------|
| No. log-ins           | M (SD) | 1.7   | (15.8)  | 1.4       | (2.1)   | 1.9             | (2.2)   |
|                       | 0      | 34    | (22.5%) | 65        | (43.0%) | 37              | (37.4%) |
|                       | 1      | 64    | (42.4%) | 51        | (33.8%) | 44              | (44.4%) |
|                       | ≥ 2    | 53    | (35.1%) | 35        | (23.2%) | 18              | (18.2%) |
| No. minutes logged-in | M (SD) | 20.8  | (26.2)  | 17.9      | (20.6)  | 20.0            | (20.1)  |

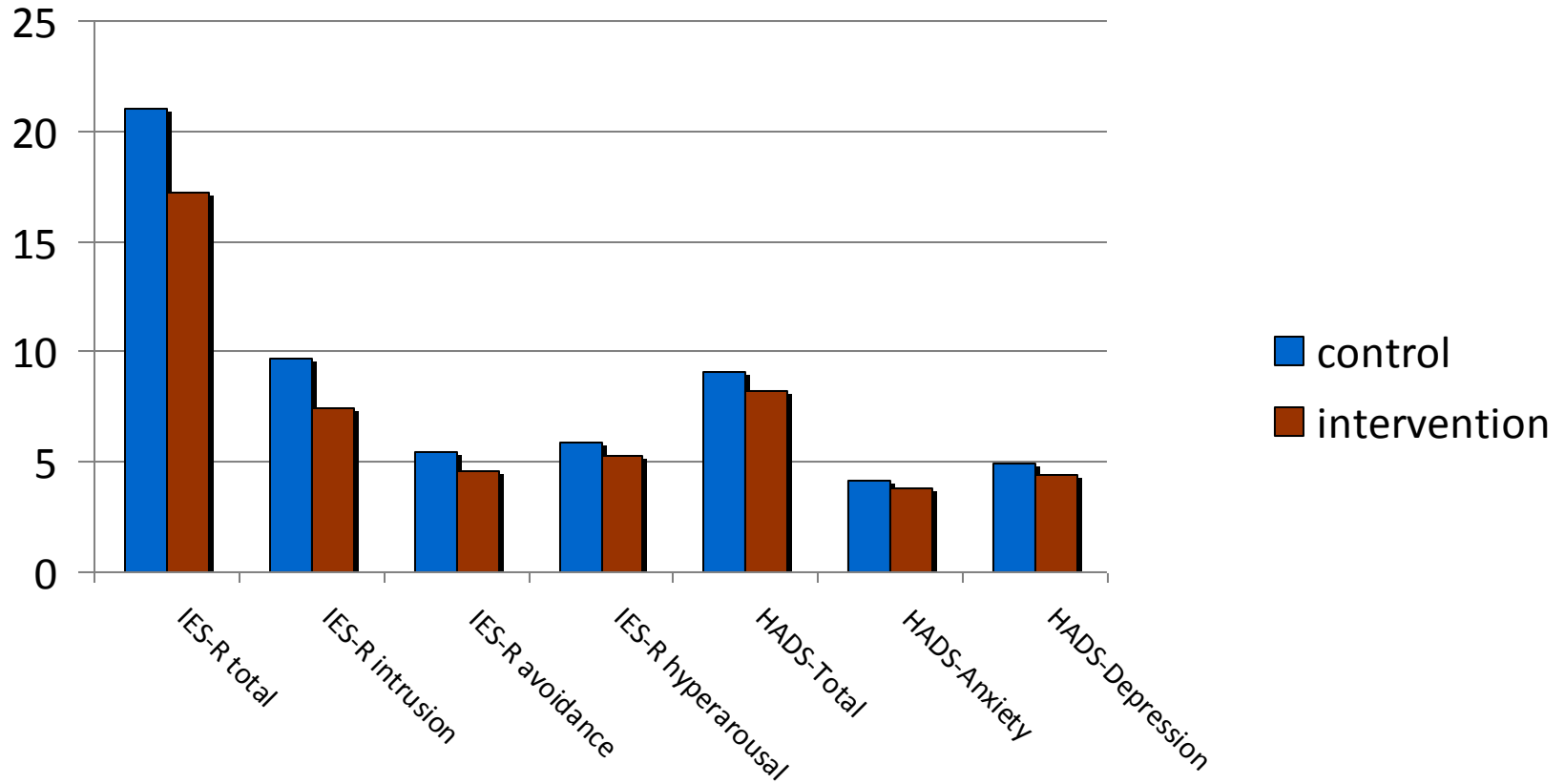
## At first log-in:

## Δ (difference pre-/post-intervention)

|                      |        |            |
|----------------------|--------|------------|
| online acute anxiety | M (SD) | 2.8 (15.8) |
| online acute arousal | M (SD) | 5.4 (17.7) |



# Baseline: self-report





# Psychopathology diagnoses

|                           | Baseline   | 1 month   | 3 months  |
|---------------------------|------------|-----------|-----------|
| <b>PTSD (CAPS):</b>       |            |           |           |
| total                     | -          | 21 (9.2%) | 12 (7.6%) |
| control                   | -          | 11 (9.6%) | 8 (11.1%) |
| intervention              | -          | 10 (8.8%) | 4 (4.7%)  |
| <b>Anxiety (MINI):</b>    |            |           |           |
| total                     | 38 (12.8%) | 10 (4.4%) | 10 (6.4%) |
| control                   | 17 (11.5%) | 6 (5.4%)  | 6 (8.5%)  |
| intervention              | 21 (14.2%) | 4 (3.5%)  | 4 (4.7%)  |
| <b>Depression (MINI):</b> |            |           |           |
| total                     | 26 (8.8%)  | 17 (7.6%) | 5 (3.2%)  |
| control                   | 12 (8.1%)  | 9 (8.0%)  | 1 (1.4%)  |
| intervention              | 14 (9.5%)  | 8 (7.1%)  | 4 (4.7%)  |





# Main outcomes: mixed model

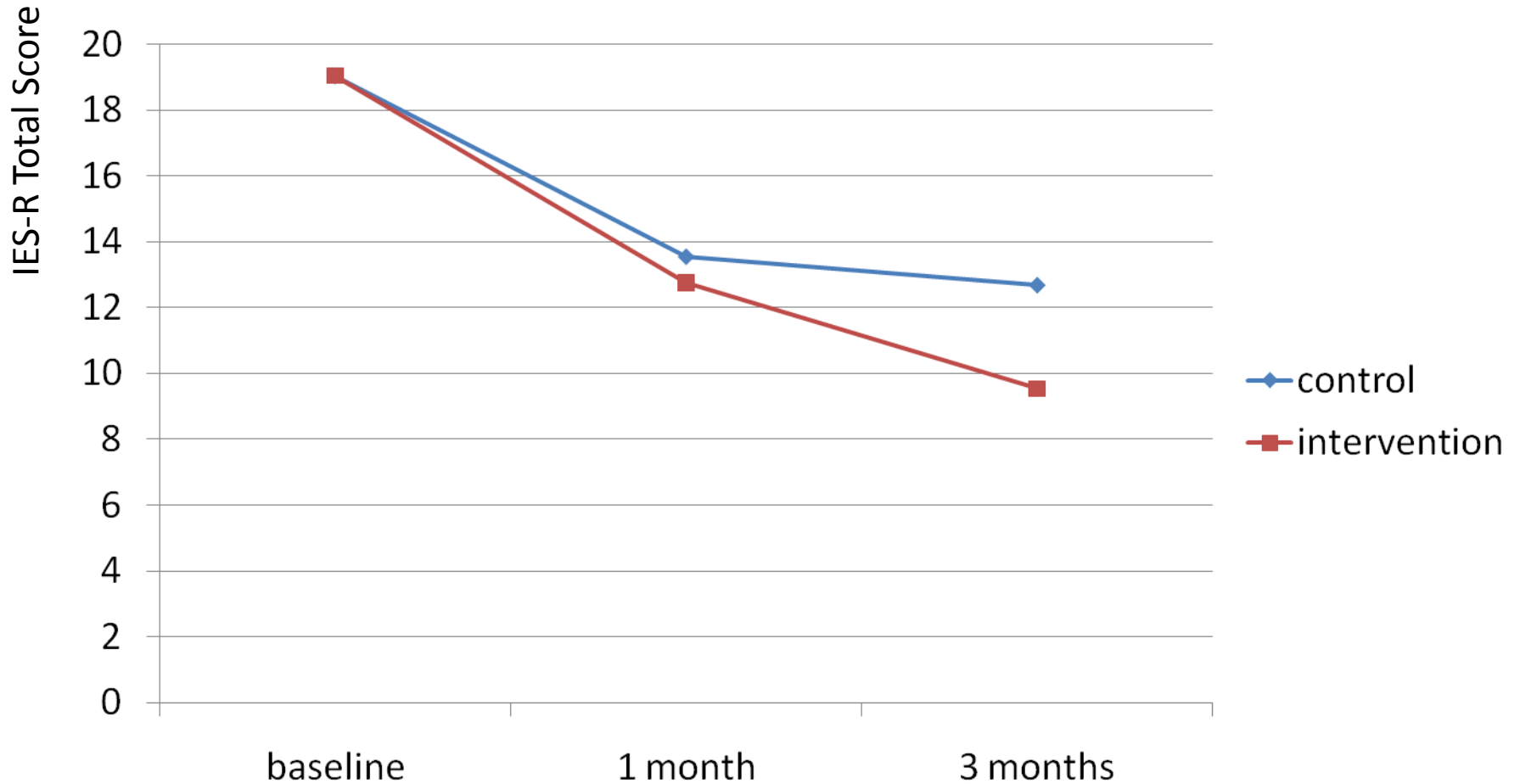
| Measure            | Group effect (F) | Time effect (F) | Group x Time effect (F) |
|--------------------|------------------|-----------------|-------------------------|
| IES-R Total        | 1.61             | 3.72 (p=.057)   | 1.23                    |
| IES-R Intrusion    | .72              | .43             | 2.95                    |
| IES-R Avoidance    | 1.94             | 2.22            | .02                     |
| IES-R Hyperarousal | .14              | <b>8.99**</b>   | .31                     |
| HADS-A             | 1.64             | .24             | .10                     |
| HADS-D             | <b>4.15*</b>     | .22             | .14                     |

All mixed models controlled for baseline assessments.

\*  $p < .05$ , \*\*  $p < .01$



# Linear mixed model: IES-R total score





# Conclusions

- Preliminary results, still awaiting total data sample.
- No harmful effects were found: intervention group scores lower than control group on all measures of PTSD, anxiety and depression.
- Preliminary mixed model results show no significant group x time interaction effects.
- Offering a brief web-based early intervention to a recently traumatised and injured patient sample is feasible and well-tolerated.



# Future directions

- Possible sub-group effects:
  - reduction of acute arousal and anxiety
  - log-in behaviour
  - injury characteristics



# Acknowledgements

## **Trauma TIPS project group**

Carel Goslings  
Jan Luitse  
Ping Fung Kon Jin  
Mark Scholing  
Teun-Peter Saltzherr  
Hans Reitsma  
Gerrolt Jukema  
Bart Veenings  
Joost van Galen

## **Research assistants**

Susanne van Buschbach  
Nina van der Togt  
Hendrieke Bolding

## **Interviewers and students**

|                      |                         |
|----------------------|-------------------------|
| Linda Wink           | Annemieke van der Horst |
| Sabina Mak           | Rutger van der Schrier  |
| Lena Zuskova         | Saskia ter Horst        |
| Rosalie Knuvelde     | Loes Stockmann          |
| Kees-Jan Slager      | Mara Mansveld           |
| Annet van Noorloos   | Serge Steenen           |
| Michelle Feddema     | Margina Gorter          |
| Xiomara Boschveld    | Djahill Groot           |
| Sanderina Visser     | Maaïke van Splunter     |
| Heleen van der Knaap | Caroline Scholten       |
| Lana van Es          | Carlijn Koornstra       |
| Melanie Baas         | Elise van der Kooij     |
| Marina Kremeshnaja   | Maud Hoeks              |
| Yak Mee Wong         |                         |