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Short-term mental health effects of training for the HandbikeBattle and associations with physical capacity

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HandbikeBattle

- Uphill handcycling mountain race (21 km, 900m↑)
- Teams: former patients from 12 Dutch rehabilitation centers
- Training: free-living

HandbikeBattle

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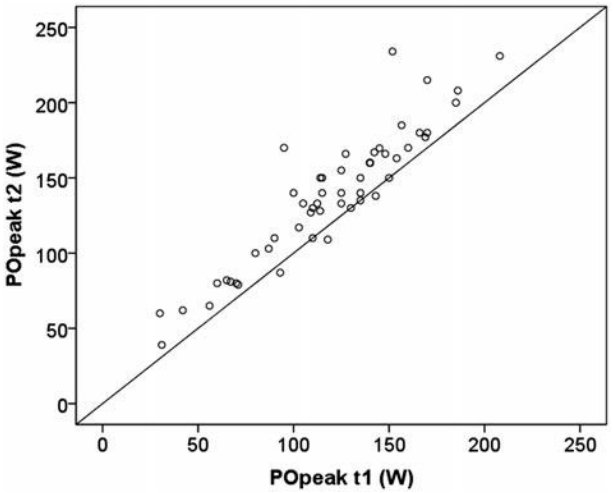
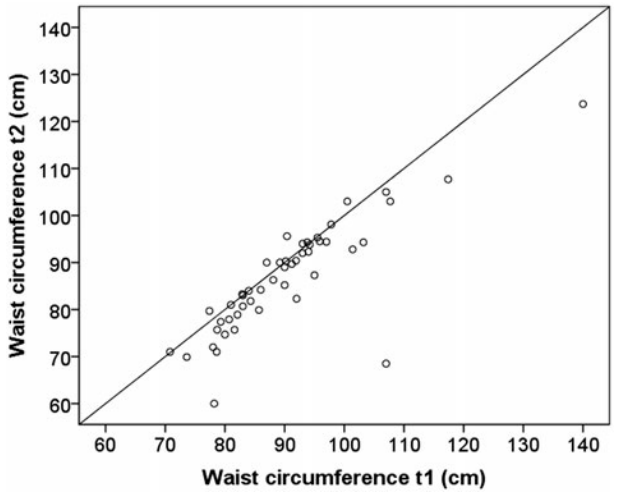
Effects on physical fitness and health

N = 59





S. Hoekstra, L. Valent, D. Gobets, L. van der Woude, S. de Groot. (2017) Effects of four-month handbike training under free-living conditions on physical fitness and health in wheelchair users. Disabil Rehabil. Aug;39(16) :1581-1588

Effects on quality of life?

Aim

To examine over time:

- Changes in *life satisfaction* and *mental health* during 5 months of training prior to the HandbikeBattle and at 4-months follow-up.
- Associations among changes in *physical fitness* and changes in *life satisfaction* and *mental health* during the training period.

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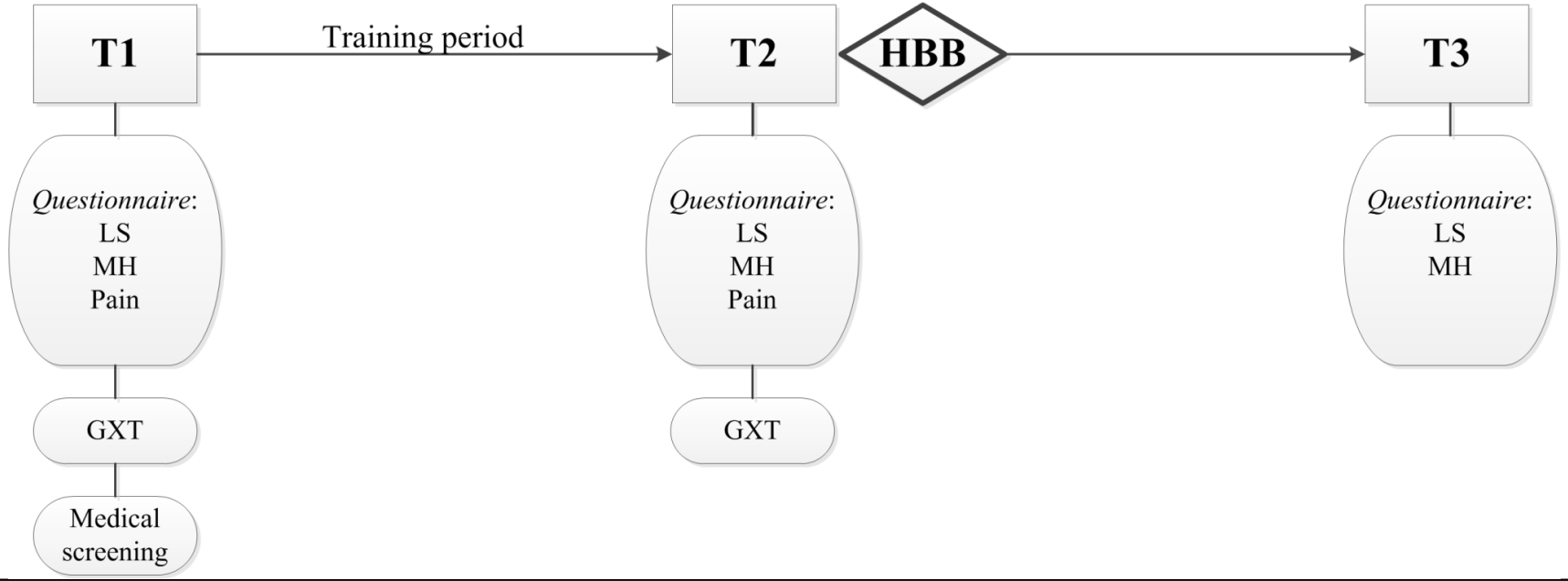
Study design



Methods

Participants

N = 136 (80% men)

Age: 41 ± 13 years

- 71% SCI
- 13% amputation
- 4% spina bifida
- 1% multi trauma
- 11% other

Methods

Questionnaires

Life satisfaction → 2LS

- 2 questions
- Life satisfaction now (1 – 6), and compared with before impairment (1 – 7)
- Sum score (range 2 – 13) low → high LS

Mental health → SF36-MHI-5

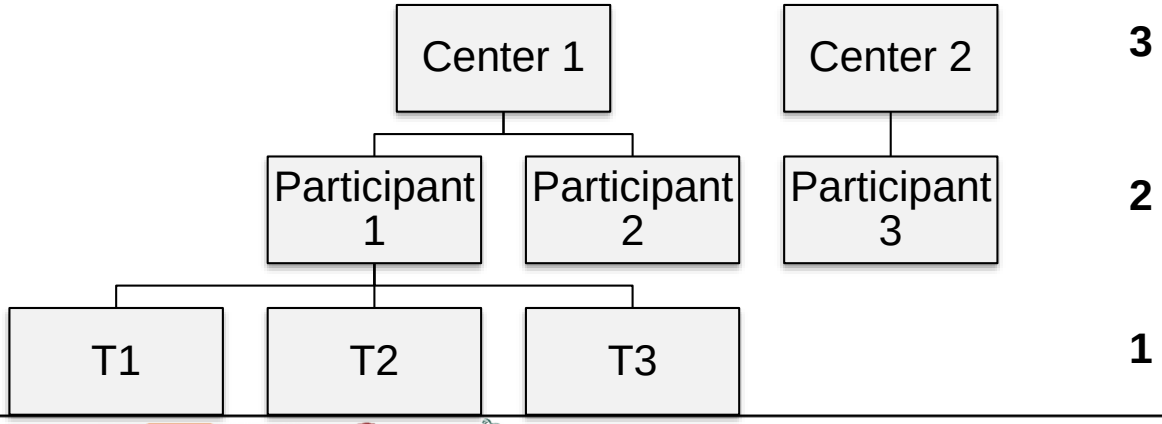
- 5 items: nervousness, sadness, peacefulness, mood, happiness (1 – 6)
- Sum score (range 0 – 100) low → high MH.

Methods

Statistical analyses

Multilevel regression analyses (3-level model, MLwiN software)

Correct for dependency of observations



Methods

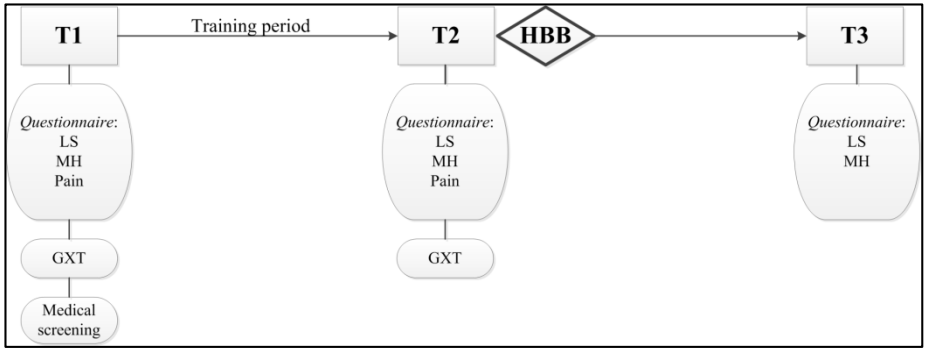
Statistical analyses

Multilevel regression analyses (3-level model, MLwiN software)

Research question 1: changes over time

LS = constant + …* T1 + … * T3

MH = constant + …* T1 + … * T3



Methods

Statistical analyses

Multilevel regression analyses (3-level model, MLwiN software)

Research question 2: longitudinal associations with physical fitness

4 Hybrid models

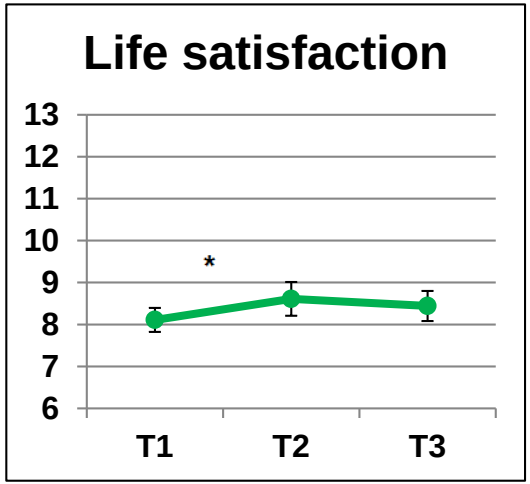
LS = constant + …* VO2peak(within) + … * VO2peak(between)

MH = constant + …* POpeak(within) + … * POpeak(between)

JWR Twisk, W de Vente. (2019) Hybrid models were found to be very elegant to disentangle longitudinal within- and between-subject relationships. Journal of Clinical Epidemiology. 107: 66-70

Results

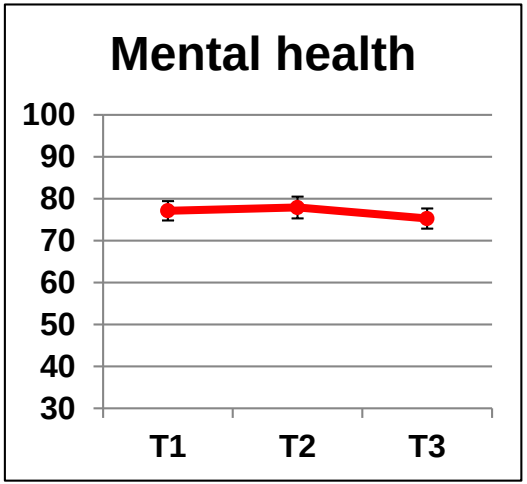
- Research question 1: changes over time



* Significant increase during training period

Results

- Research question 1: changes over time



Results

- Research question 2: longitudinal associations with physical fitness

Life satisfaction	Regression coefficient	Standard error
POpeak (between-subject)	0.004	0.007
POpeak (within-subject)	0.014	0.007

Life satisfaction	Regression coefficient	Standard error
VO2peak (between-subject)	0.904	0.406
VO2peak (within-subject)	1.068	0.516

Results

- Research question 2: longitudinal associations with physical fitness

Mental health	Regression coefficient	Standard error
POpeak (between-subject)	0.001	0.001
POpeak (within-subject)	0.000	0.001

Mental health	Regression coefficient	Standard error
VO2peak (between-subject)	0.073	0.047
VO2peak (within-subject)	0.060	0.062

Summary

- Life satisfaction *improved* during the training period.
- Mental health showed *no significant change* over time.

- *Improvement* in physical fitness (VO2peak and POpeak) was associated with an *increase* in life satisfaction.

- Physical fitness was *not significantly associated* with mental health.

Discussion

- One of few longitudinal studies
- Potential underlying mechanisms:
  - Increased self-efficacy
  - Reduced pain
  - Increased functional indepence
  - Increased body satisfaction

- Other factors:
  - Peer support / social interaction
  - Purpose

Discussion

- Future studies
  - Long-term follow-up results
  - Underlying mechanisms / intermediate effects
  - How to sustain the improvement in LS during follow-up

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Thanks for your attention

Sponsored by:

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