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Technology-Based Gait Training in People With Chronic Gait Impairments – Is It Worth It?

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Introduction

Technology-based gait training (TBGT) results in functional improvements early after neurological event.[1]

Benefits of TBGT in chronic stage is unknown.

TBGT is only paid by insurances in Switzerland on individual basis. Willingness to pay for TBGT has not been evaluated.

Goal of Study

Investigate if technology-based gait training leads to functional and QoL improvements in people with chronic conditions and estimate price-dependency of market share

Methods

27 participants (age: 58 years, height: 174 cm, mass: 74 kg, time since diagnosis: 8 years, non-progressive neurological diagnosis)

Devices for training, depending on physical capabilities (Figure 1)

Figure 1: devices used for training: a) Lokomat® (Hocoma), b) Andago® (Hocoma), c) C-Mill® (Motek)

Assessments performed at baseline and after 3 and 6 months of training (M3 & M6) (Figure 2 for sequence of procedures)

- 10 meters walking test (10MWT)
- 6 minutes walking test (6MWT)
- Functional Ambulation Category (FAC)
- EQ-5D-3L
- WHODAS 2.0
- Patient global impression of change rating (PGIC): only at M3 and M6
- Willingness-to-pay was assessed via choice-based conjoint-analysis after two weeks of training using the following attributes:
  - form of therapy: conventional physical therapy, medical training, TBGT
  - supervision ratio: 1:1, 1:2, 1:5
  - length of journey: 10 min, 20 min, 30 min
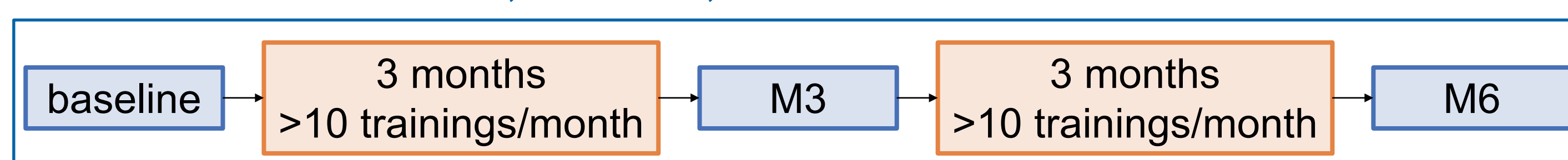 - cost/hour: CHF 25, CHF 115, CHF 160

Figure 2: sequence of study procedures. Assessments in blue, training phases in orange

Paired t-test with Bonferroni-correction for comparison of:
- baseline vs. M3 (n=27)
- M3 vs. M6 (n=20 , 7 participants dropped out after M3)
- baseline vs. M6 (n=20)

References
1. Mehrholz, J. et al. Cochran Database of Systematic Reviews. 2020; 10.
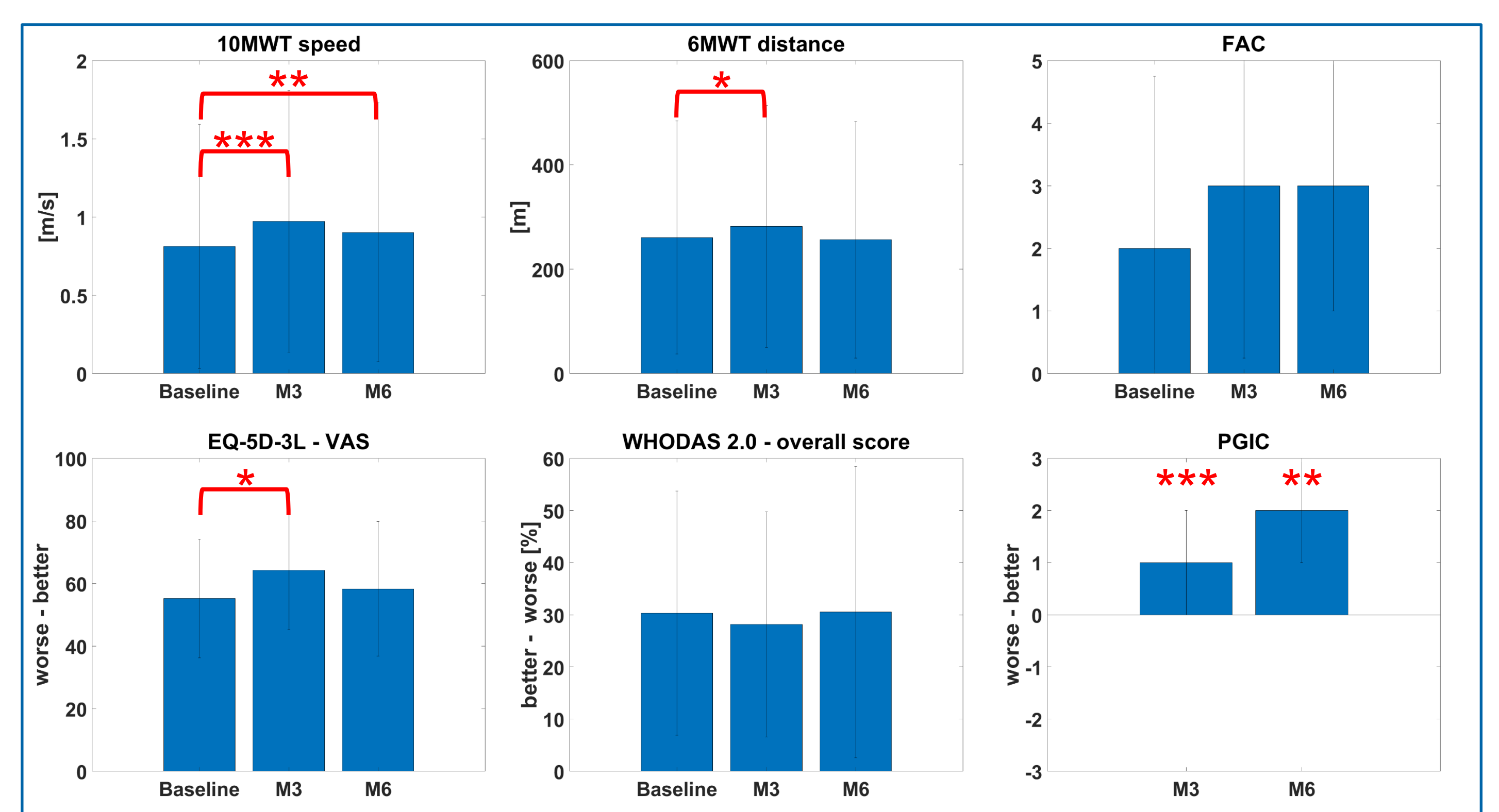2. Schmid, A. et al. Stroke. 2007; 38(7) 2096-2100.

Results

Figure 3: Comparison between baseline, M3, and M6 for functional assessments. * $p<0.05$, ** $p<0.01$, *** $p<0.001$ (with Bonferroni-correction)

Functional improvements gait improvements for 10MWT and 6MWT, but not FAC. Some QoL assessments also show improvement (Figure 3).

Discussion

TBGT improves functional outcomes in chronic conditions. Improvement of gait speed is clinically relevant.[2] Gait assessments improve more compared to assessments of quality of life.

Market-share of 55% at CHF 80 per session compared to alternatives (conventional physical therapy and medical training), which is about the rate for conventional physical therapy (Figure 4).
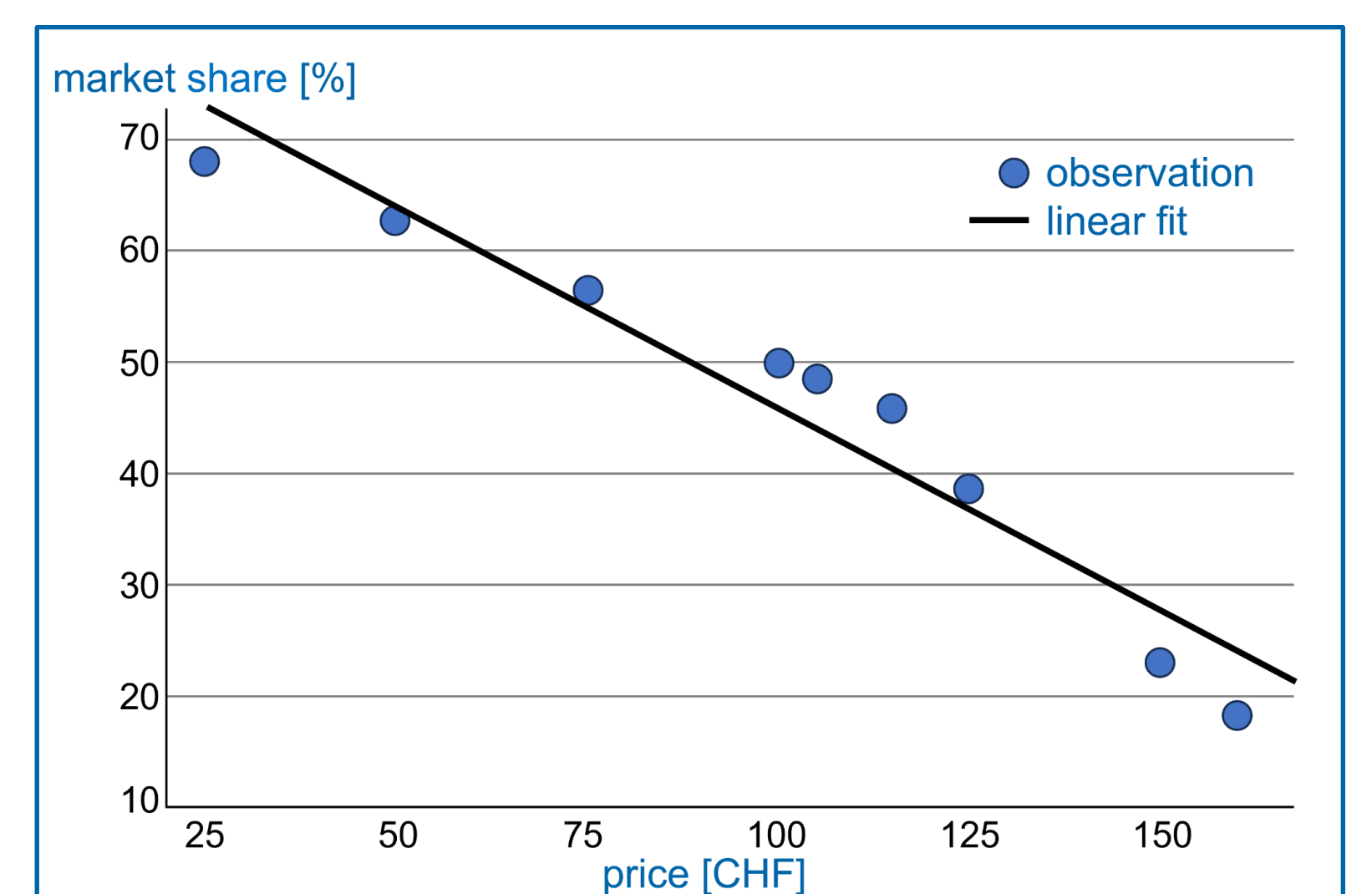

Figure 4: market-share based on conjoint analysis

Conclusions

TBGT provides training opportunities to improve functional outcomes in people with chronic, neurological diagnoses

Willingness to pay is similar to conventional therapy

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