

Effects of unstable shoes on chronic low back pain in health professionals: a randomized clinical trial

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SPINEWEEK 2012 RAI AMSTERDAM 28 MAY - 1 JUNE



Disclosure

- The company Masai Barefoot Technology has offered the shoes for all the participants
- Masai Barefoot Technology has not in any way influenced the study design, the measurement procedures, the data analysis, or the interpretation of the results
- This project was supported by a grant from Clinical Research Center, University of Geneva and Geneva University Hospitals (PRD 10-II-8).

Introduction



- Low back pain (LBP) in healthcare professionals
 - Very common complaint (*Gonge et al. 2001; Genevay et al. 2011*)
 - Responsible for an important amount of absenteeism from work (*Pheasant and Stubbs, 1992*)
 - Reach elevated annual cost (*Courvoisier et al., 2011; Genevay et al., 2011*)
- Management of LBP
 - Drugs, surgery, physical therapy (*van Middelkoop et al., 2011, White et al., 2011*)
 - Difficulty with conventional exercise training (*Nigg et al., 2009*)
 - Rate of compliance
 - Time commitments
 - Availability of the equipment
 - Degree of motivation



Introduction



- Unstable shoes
 - Modification of gait and balance (*Nigg et al., 2006*)
 - Modification of muscles activation (*Romkes et al., 2006*)
 - Significant reduction of LBP among golfers (*Nigg et al., 2009*)
- Optimal solution for exercise intervention ?
 - Not require any equipment
 - Can be used in daily life activities

Aim

- The aim of this study was to evaluate the effectiveness of unstable shoes in reducing LBP in health professionals



Method

- Design:

- Randomized controlled trial (RCT)
- Two arms



- Intervention: Wearing during 6 weeks MBT shoes



- Control: Wearing during 6 weeks conventional sport shoes (addidas – Bigroar)

- Population:

- 40 participants among employees of a Swiss hospital
- Chronic non-specific LBP

Method

- Measurements

- Primary outcome

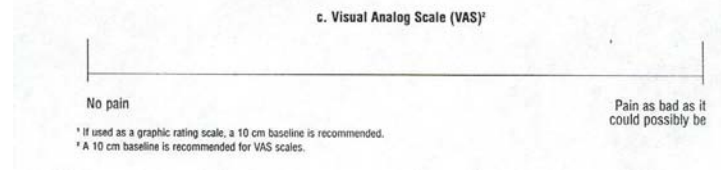
- Levels of pain (Visual Analog Scale – VAS)

- Secondary outcomes

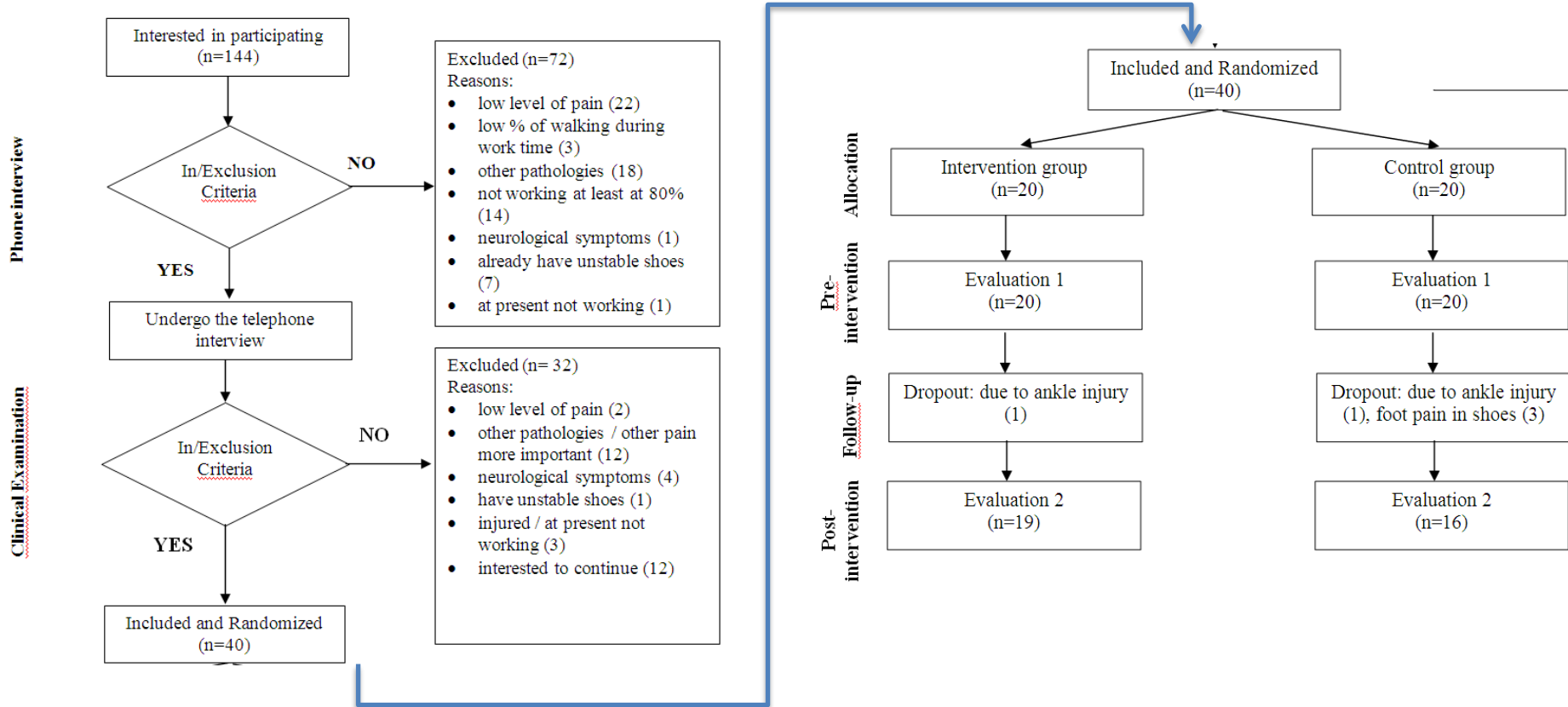
- Satisfaction
- Disability questionnaire (Roland-Morris)
- Quality of live (EQ-VAS)

- Statistics

- mean change with T-test or Mann-Whitney U
- Fisher exact test for proportion
- Intention to treat with imputation by last observation carried forward



Results - recruitment



Results - Baseline

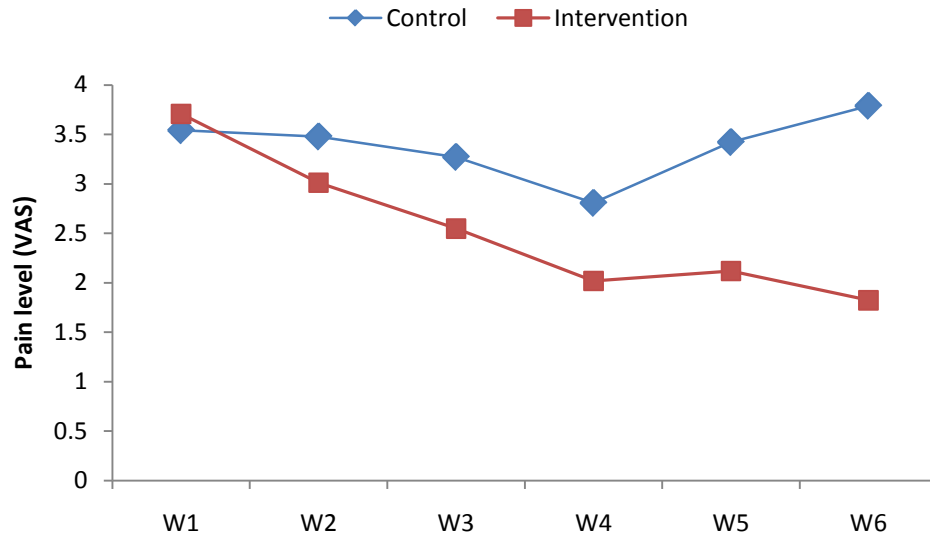
	Intervention group (n=20)	Control group (n=20)	P value (t-test or Fisher)
	Mean ± SD (range)	Mean ± SD (range)	
General Characteristics			
Age (years)	44.5 ± 7.9 (31-58)	46.8 ± 8.8 (32-62)	0.400
Height (cm)	162.1 ± 9.13 (144-180)	164.8 ± 7.8 (155-187.7)	0.312
Weight (kg)	66.2 ± 11.3 (50-90)	71.6 ± 13.7 (52.5-106)	0.183
Body mass index (kg/m ²)	25.1 ± 3.9 (20.1-32.5)	26.5 ± 5.5 (19.1-40.8)	0.340
Pain			
Pain last 24h	4.2 ± 1.9 (1.0-7.4)	4.1 ± 1.8 (0.6-7.6)	0.333
In-lab pain during walking with shoes	1.87 ± 1.6 (0-5)	2.29 ± 1.6 (0-5)	0.443
In-lab pain during barefoot walking	2.28 ± 1.9 (0-6)	2.7 ± 2.1 (0-7)	0.555
Pain killers intake (n)	7	7	1
Low back pain before this episode (n)	20	18	0.825

Results – Pre-Post intervention

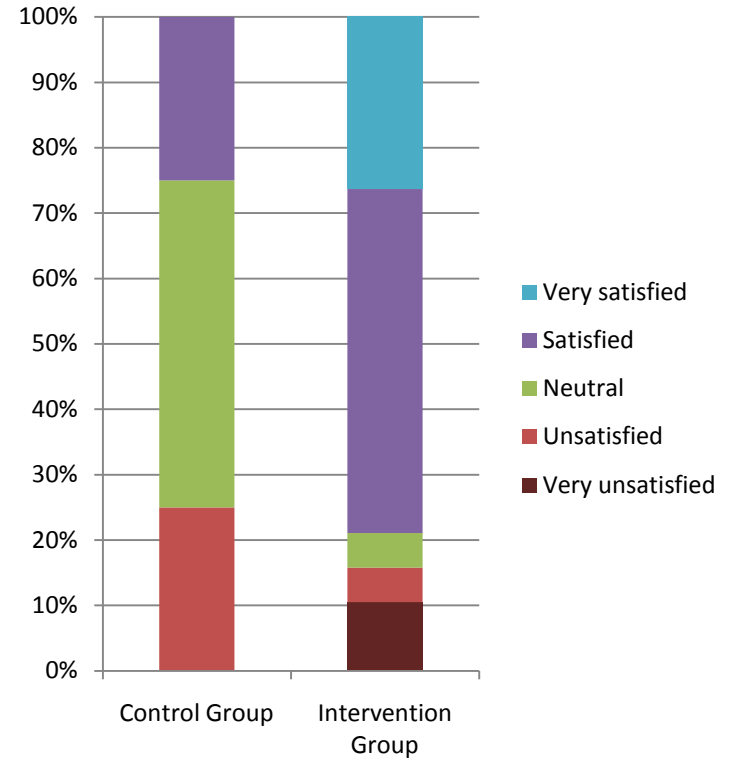
	Intervention group			Control group			P values (t-test)
	n	Mean ± SD		n	Mean ± SD		
		Baseline	Follow-up		Baseline	Follow-up	
<i>Pain</i>							
Last 24 h (VAS 0-10)	20	4.3 ± 1.9	2.8 ± 2.3	20	4.1 ± 1.8	3.5 ± 2.2	0.199
In-lab walking barefoot	18	2.3 ± 2.0	0.8 ± 1.1	19	2.7 ± 2.1	2.4 ± 2.0	0.037
In-lab walking shoes	18	1.9 ± 1.6	0.3 ± 0.8	19	2.3 ± 1.6	2.4 ± 1.6	0.001
Daily logbook	14	3.7 ± 2.3	1.8 ± 1.67	13	3.5 ± 1.4	3.8 ± 1.9	0.005
<i>Functional disability</i>							
Roland-Morris (0-24)	20	7.5 ± 3.2	5.1 ± 4.9	20	7.6 ± 3.1	6.3 ± 3.5	0.287
<i>Quality of life</i>							
EQ-VAS (0-100)	20	79.0 ± 12.7	81.4 ± 15.5	20	76.6 ± 13.4	79.8 ± 8.4	0.867

Results

LBP assessed for 6 weeks with a daily logbook



Pain management satisfaction



Conclusions

Unstable shoes compared to control shoes:

- ✓ Reduction of LBP
- ✓ Good satisfaction
- ✓ No effect on disabilities and quality of live

Perspectives:

- Evaluation during larger and longer trials
- Understanding the effect during gait and standing
- Identify the profile of the responders