

# Multidisciplinary rehabilitation in various patient groups

## New insights from 2019 to 2022

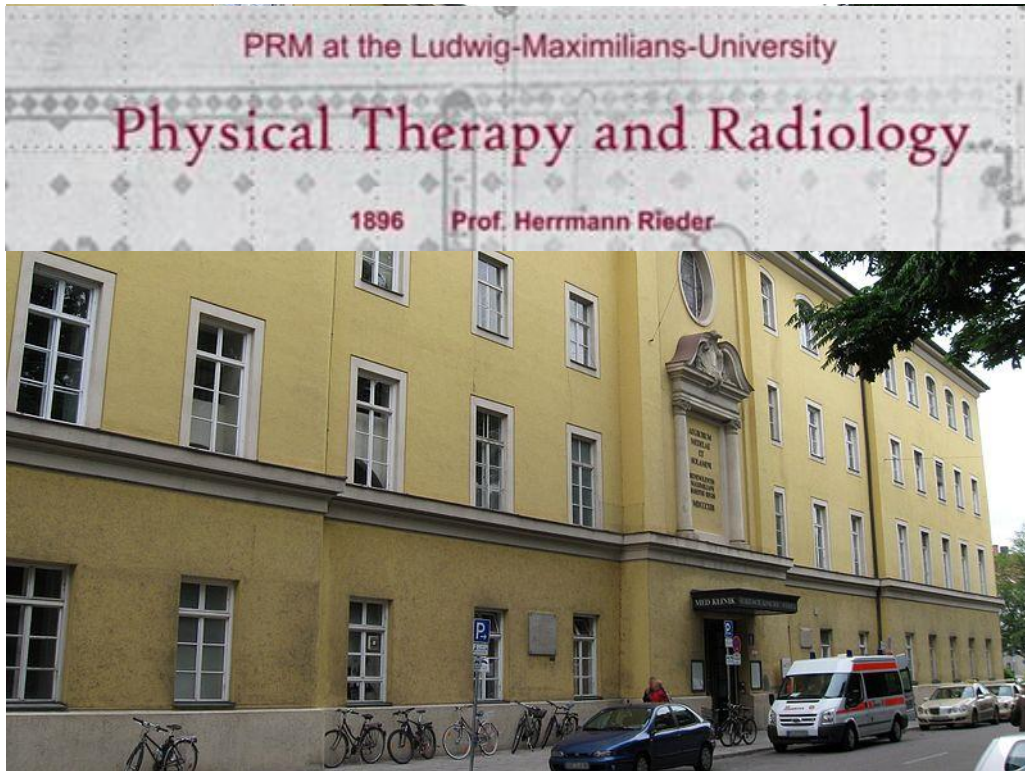
Physical und Rehabilitation Medicine  
Musculoskeletal University Center Munich (MUM),  
University Hospital, LMU Munich  
PD Dr. med. Martin Weigl, MPH



# Multidisciplinary rehabilitation in various patient groups

LMU KLINIKUM

## New insights from 2019 to 2022



PRM Department  
LMU University Hospital Munich  
Campus Innenstadt (City Center, Munich)



## Weigl 1997 - 2000

### Resident



PRM Department  
LMU University Hospital Munich  
Campus Innenstadt (City Center, Munich)

**Weigl 2000 – 2010**

**Resident + Research Fellow → Senior Physician**



PRM Department  
LMU University Hospital Munich  
Campus Großhadern



Professor Gerold Stucki  
Chair  
Medical Director

**Weigl 2010 – 2013**

**Bad Feilnbach, Bavaria**

**Head of orthopedic rehabilitation in collegial system with orthopedic surgeon**



Rehabilitation Clinic  
Clinic+More  
Bad Feilnbach  
Bavaria  
Germany



Alps  
Wendelstein Peak  
Bad Feilnbach  
Bavaria  
Germany



**Weigl 2013 - ?**

**LMU University Hospital Munich  
Orthopedic + Trauma Surgery + Rehabilitation Medicine  
= Musculoskeletal University Center Munich (MUM)**



# Multidisciplinary bio-psycho-social rehabilitation (MBR)

## New insights 2019 to 2022

- MBR in patients with chronic neck pain
  - Is MBR effective in patients with chronic neck pain?
  - Predictors of outcome?
- MBR in patients with chronic low back pain
  - Do patients above 65 years of age benefit from MBR?
  - What is the long-term course, later than 12 month after treatment?
- MBR in patients with Post-Covid-Syndrome
  - Pilot results from a 3-week day clinic programme

## **3-week Multidisciplinary bio-psycho-social rehabilitation (MBR) Day care clinic, PRM department, LMU Hospital Munich**

- 3 weeks (9 days), 44 h, groups with 5-10 patients
- Start: 2001
- Health condition specific MBR
  - Chronic low back pain
  - Chronic neck pain
  - Osteoporosis (+ pain + disability)
  - (Osteoarthritis of knee / hip until 2021)
  - 2022: Post-Covid-Syndrome



# MBR for musculoskeletal health conditions

## Day care clinic, LMU Hospital Munich



### Exercise therapy

- Deep trunk muscle stabilization
- Gym training with weight machines
- Endurance training
- Balance exercises
- Aquatic exercises
- Hunova Robotic device (sensorimotor Training)

### Psychology

- Cognitive behavioral therapy
- Relaxation techniques (Jacobson technique)
- Overcome fear-avoidance behavior

### Education by PRM specialist

- Bio-Psycho-Social model
- Physical activity and pain
- Pain medication

## Multidisciplinary biopsychosocial rehabilitation

### Occupational training

- Work and household ergonomics
- Structuring daily activities
- Ergonomic bicycles
- Ergonomic lifting
- Recommendations for mattresses and cushions

### Weekly interdisciplinary group meeting with patients

### Self-help techniques

- Warm packs
- Kneipp hydrotherapy\*\*
- Self-Massage techniques



# MBR for patients with chronic neck pain

## Background

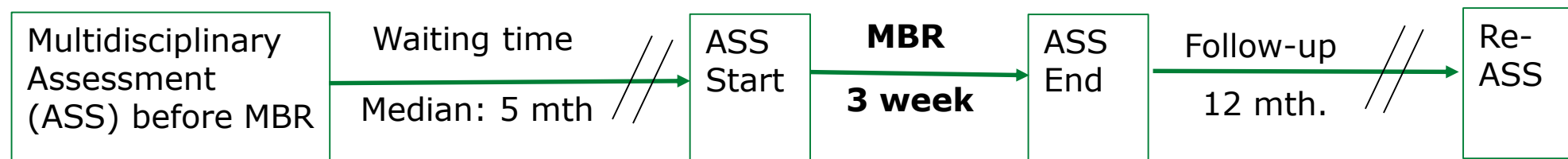
We know:

- Neck pain ranks 3rd in terms of years lived with disability in developed countries (Global Burden of Disease study)
- Therapeutic exercise is effective in patients with neck pain (Cochrane review 2013)

**→ Is MBR effective, if exercise + medication have failed?**

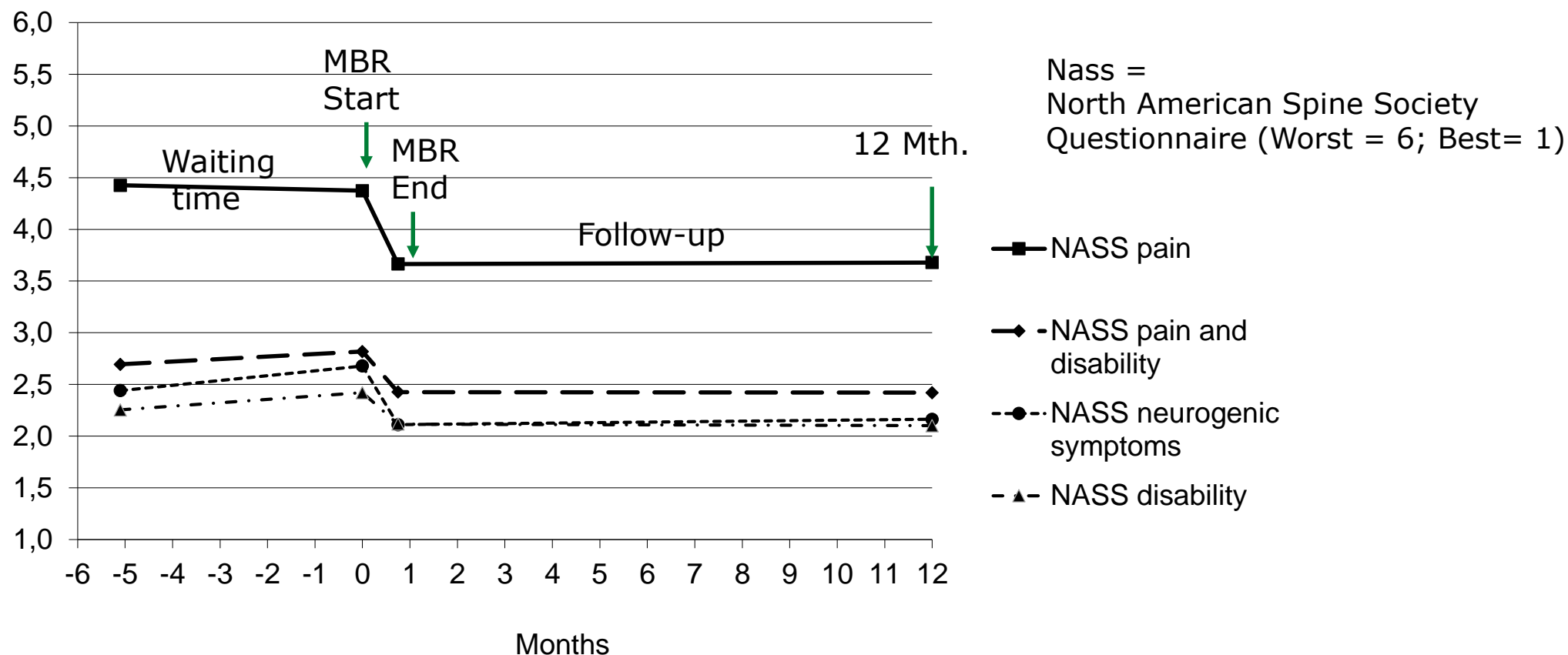
## Effect of MBR for patients with chronic neck pain

Observational study with 1-year follow-up in 82 patients with intraindividual control of effects



# MBR for patients with chronic neck pain

Significant improvements 12 months after MBR ( $p < 0.001$ )



Letzel, Angst, Weigl: Multidisciplinary biopsychosocial rehabilitation in chronic neck pain: a naturalistic prospective cohort study with intraindividual control of effects and 12-month. Eur J Phys Rehabil Med, 2019



## MBR for patients with chronic neck pain

### Prognostic factors for improvement of pain and disability Background

We know:

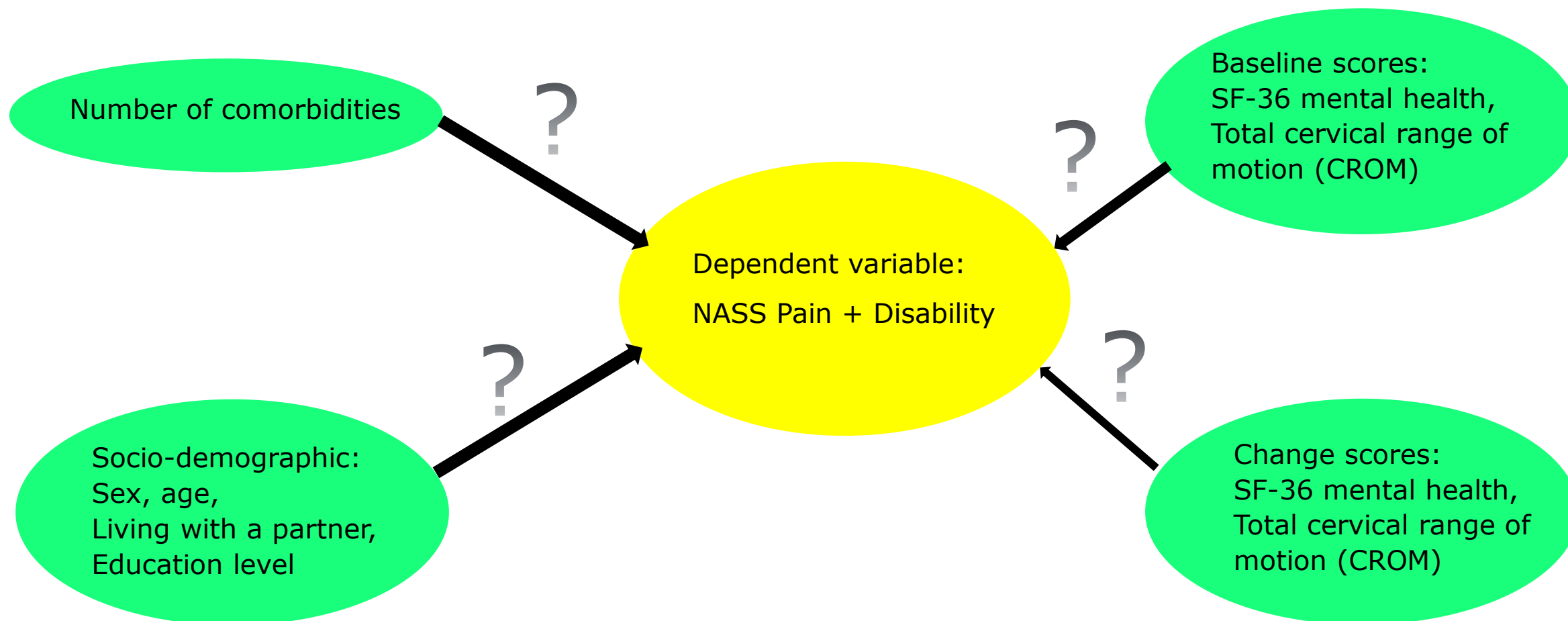
- Therapy effects vary in different patients

→ **Prognostic factors of outcome after MBR?**

→ **Knowledge of prognostic factors may help in the adoption of treatment for patients who are less likely to respond to MBR programmes**

# MBR for patients with chronic neck pain

## Prognostic factors for improvement of pain and disability Variables



Weigl, Letzel, Angst: Prognostic factors for the improvement of pain and disability following multidisciplinary rehabilitation in patients with chronic neck pain. BMC Musculoskeletal Disorders, 2021

## MBR for patients with chronic neck pain

Prognostic for pain+disability 6 months after MBR (82 patients)

Covariate	P-value	Partial correlation
Constant	0.006	
<b>Pain+Disability baseline</b>	<b>&lt;0.001</b>	<b>0.364</b>
<b>SF-36 mental health, change</b>	<b>0.002</b>	<b>0.297</b>
<b>Active ROM change</b>	<b>0.001</b>	<b>0.247</b>
<b>Active ROM baseline</b>	<b>0.037</b>	<b>0.204</b>
SF-36 mental health, baseline	0.066	0.180
Age	0.172	0.134
Sex (0=female, 1=male)	0.331	0.096
Education	0.62	-0.047
Model total (R <sup>2</sup> : 0.213)	0.001	

Weigl, Letzel, Angst: Prognostic factors for the improvement of pain and disability following multidisciplinary rehabilitation in patients with chronic neck pain. BMC Musculoskeletal Disorders, 2021

# MBR for patients with chronic low back pain

## Is it effective in patients above 65 years?

## Background

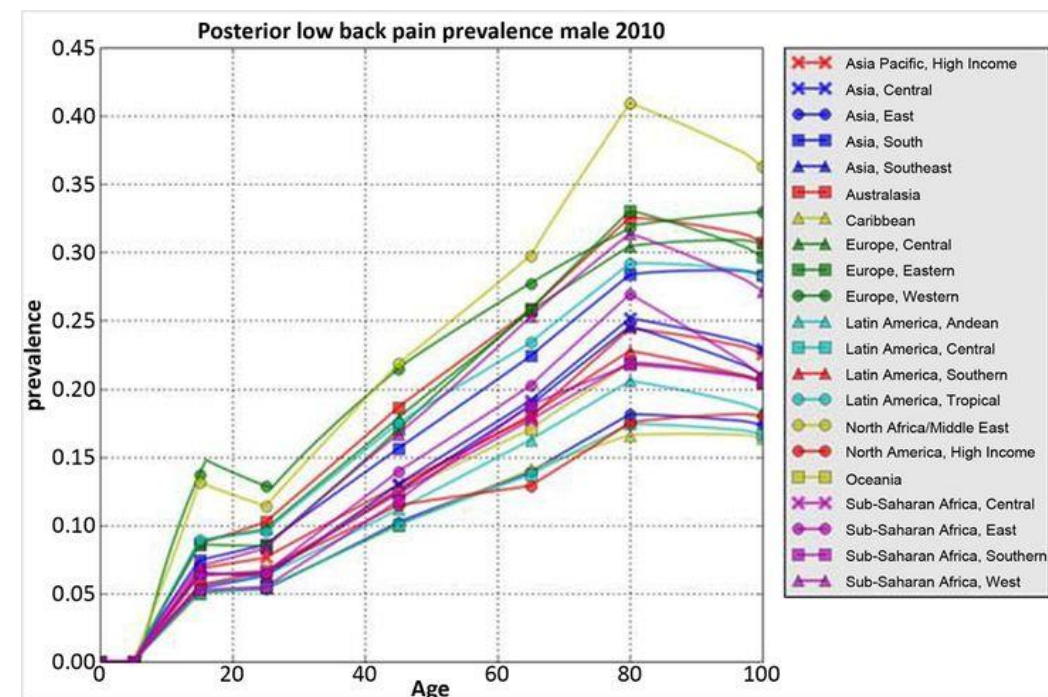


### Multidisciplinary biopsychosocial rehabilitation for chronic low back pain (Review)

Kamper SJ, Apeldoorn AT, Chiarotto A, Smeets RJ, Ostelo RWJG, Guzman J, van Tulder MW

- 41 studies, 6858 patients
- Multidisciplinary Biopsychosocial Rehabilitation improves disability and pain
- “effects are of modest magnitude”

**Mean age in most studies:  
40 – 45 years!**



**Prevalence increases with age!**



## MBR for patients with chronic low back pain

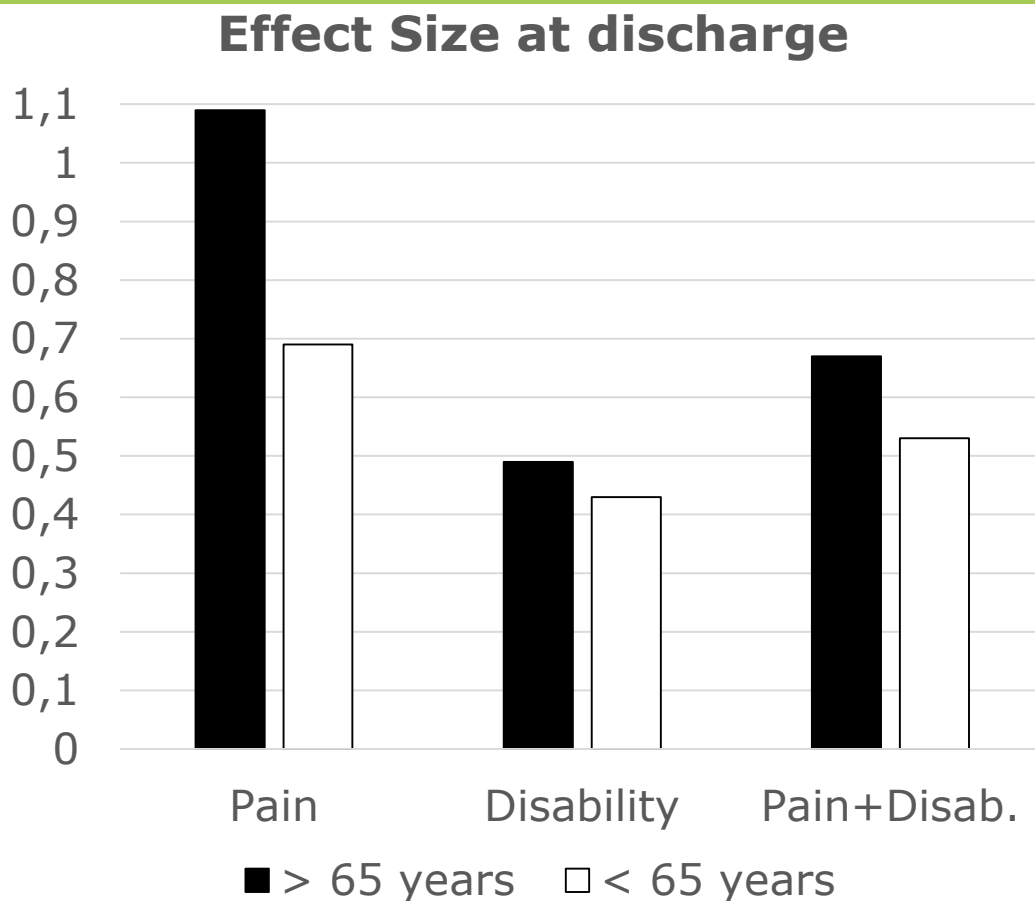
Observational study with 1 year follow-up in 203 patients

	> 65 Years	< 65 years	P-value
N	104	99	
Age	70,7	56,4	< 0.001
Comorbidity (N)			< 0.001
0	21%	37%	
1	30%	39%	
2	30%	13%	
3	17%	7%	
>= 4	3%	3%	
NASS pain + disability	3.1	3.1	0.78
NASS pain	4.6	4.4	0.26
NASS disability	2.7	2.8	0.47

Proetzel, Weigl: Is multidisciplinary rehabilitation for low back pain effective in patients above 65 years?  
An observational cohort study with 12-month follow-up. Eur J Phys Rehabil Med, 2021

## MBR for patients with chronic low back pain

Significant improvements in Pat > 65 y and < 65 y at discharge  
Comparison of Effect Size

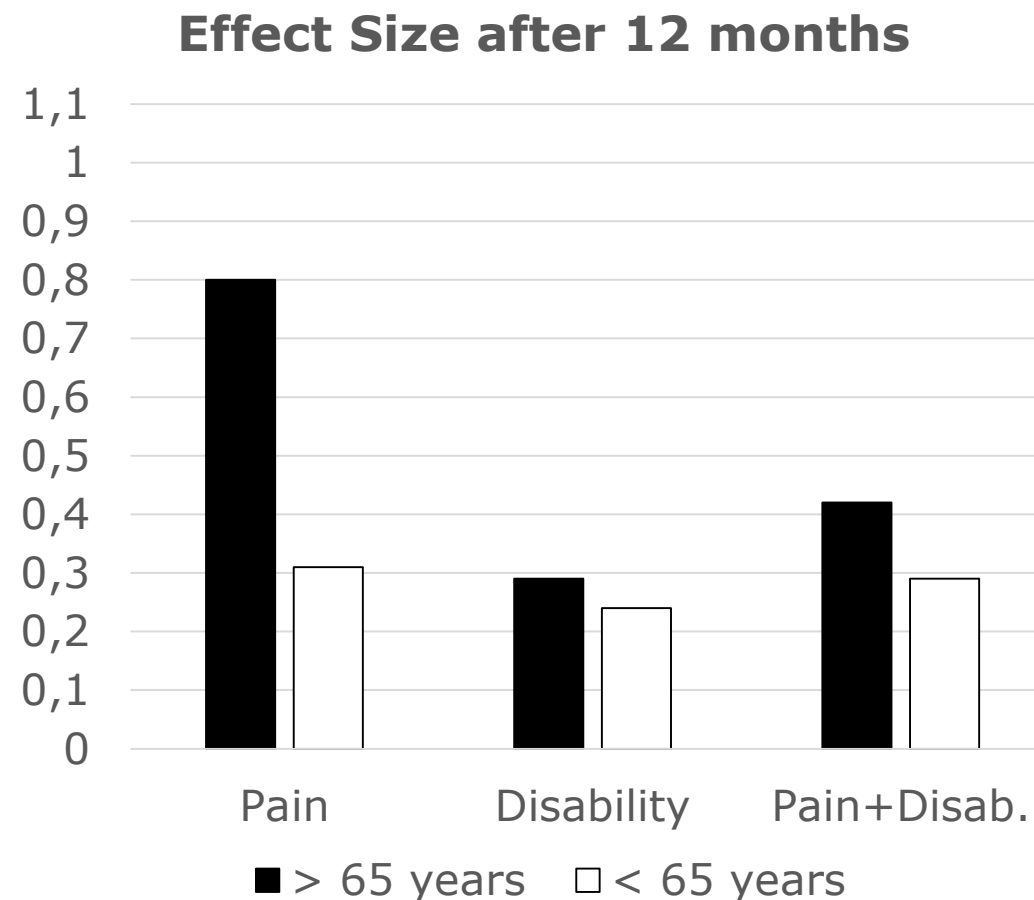
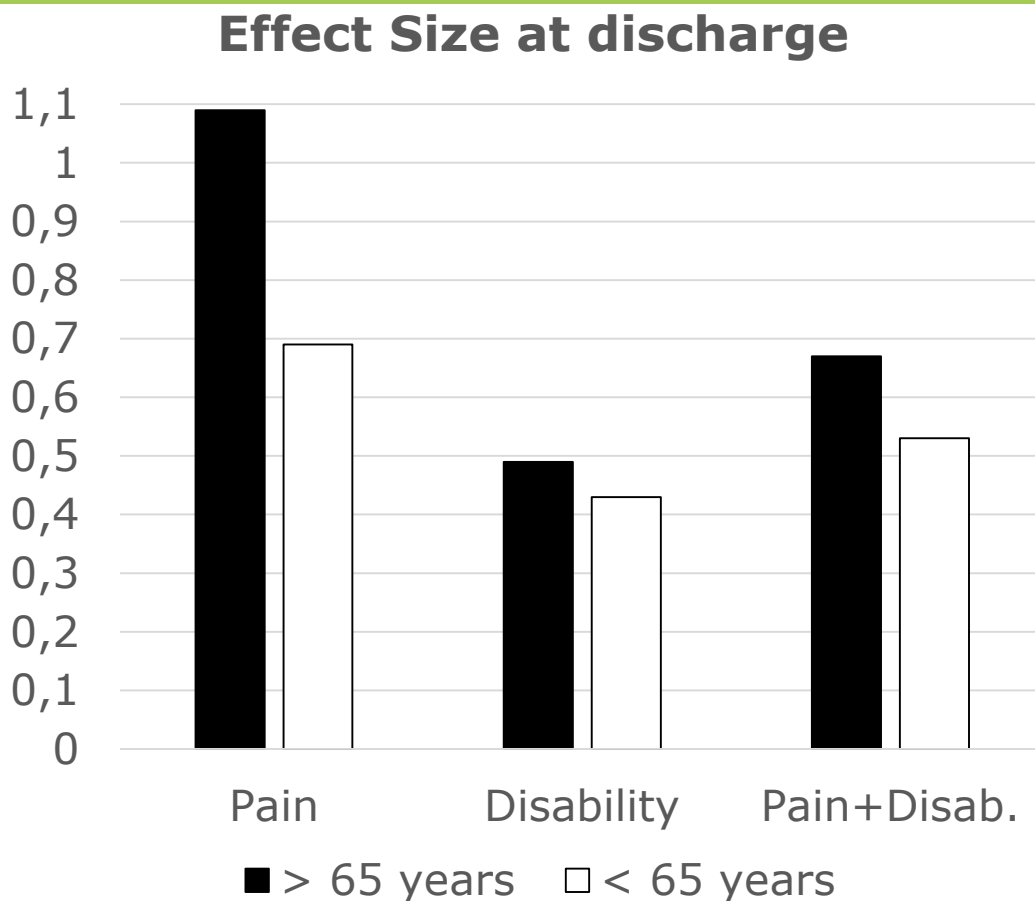


$$ES = (T2 - T1) / SD \text{ baseline}$$

Proetzel, Weigl: Is multidisciplinary rehabilitation for low back pain effective in patients above 65 years?  
An observational cohort study with 12-month follow-up. Eur J Phys Rehabil Med, 2021

## MBR for patients with chronic low back pain

Significant improvements in Pat > 65 y and < 65 y after 12 months  
Comparison of Effect Size



Proetzel, Weigl: Is multidisciplinary rehabilitation for low back pain effective in patients above 65 years?  
An observational cohort study with 12-month follow-up. Eur J Phys Rehabil Med, 2021

## **MBR for patients with chronic low back pain**

### **Course of pain and disability after 1 year?**

We know:

- MBR alleviates patients suffering at least 1 year
- MBR can reduce direct and indirect costs in the first year after treatment
- MBR are expensive

**→ Long-term course of pain and disability in chronic low back pain patients after MBR?**

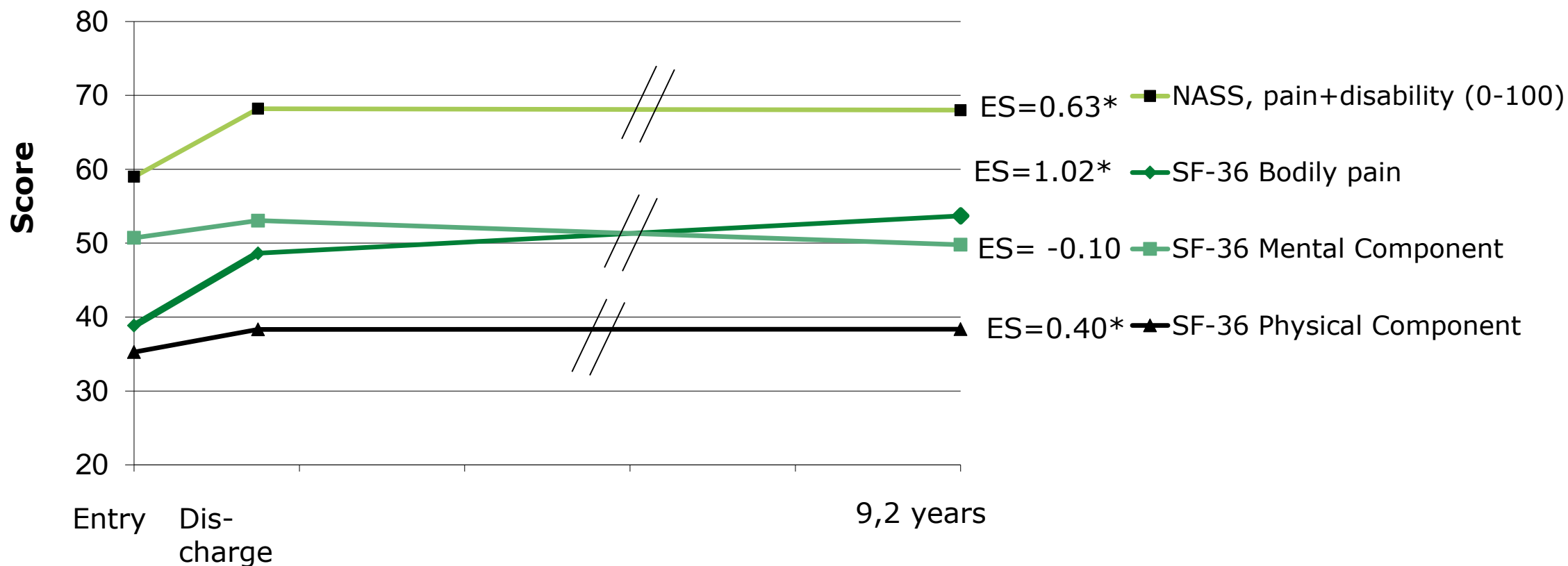
**→ Are the efforts for the patients and the costs for the health care system worth it in the long term?**



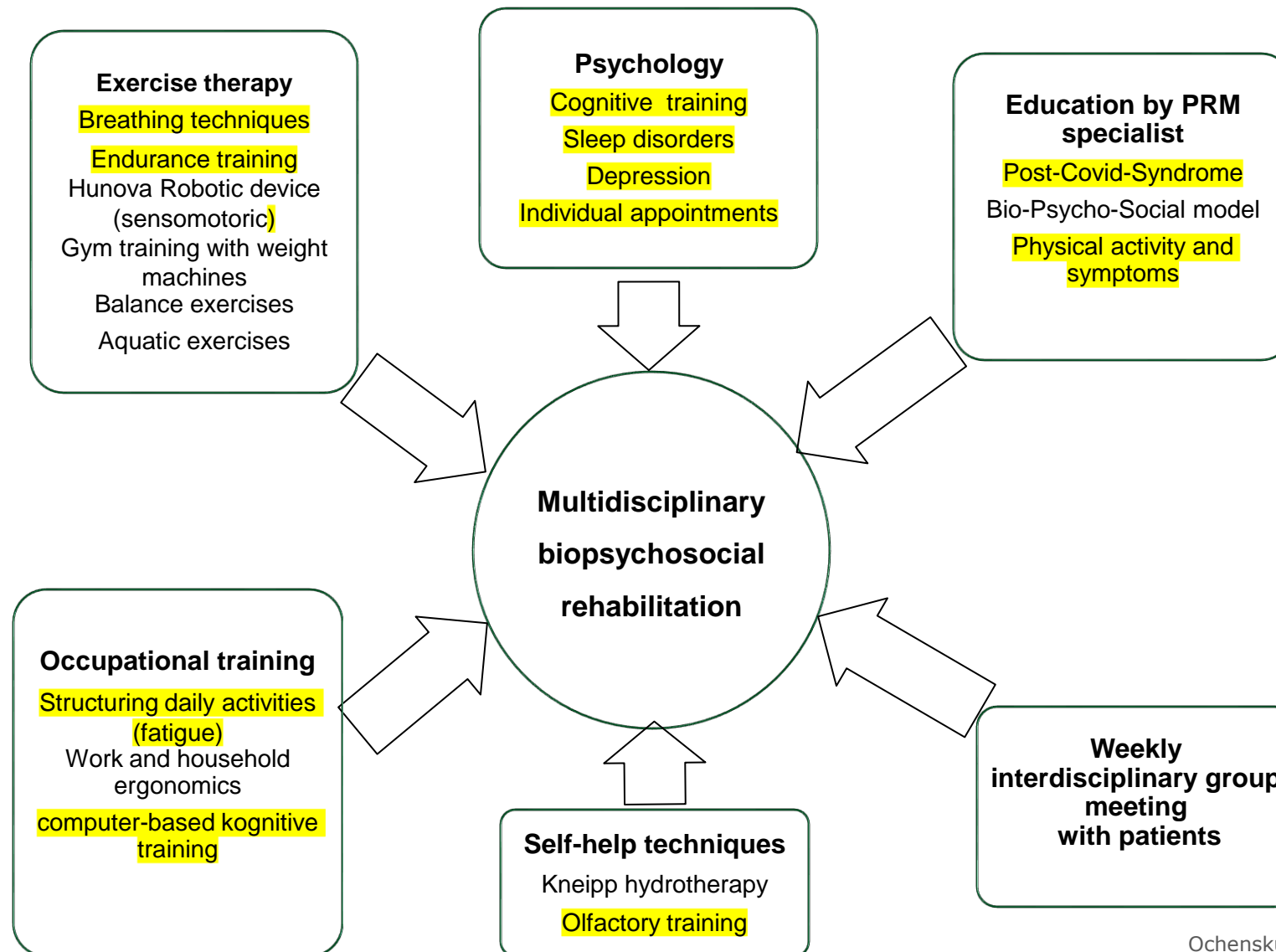
# MBR for patients with chronic low back pain

4 to 15 years follow-up (mean: 9,2 years), 114 patients

## Course from entry of MBR to long-term follow-up



# Multidisciplinary bio-psycho-social rehabilitation (MBR) in patients with Post-Covid-Syndrome at LMU Hospital Munich



Ochenskuehn, Weigl

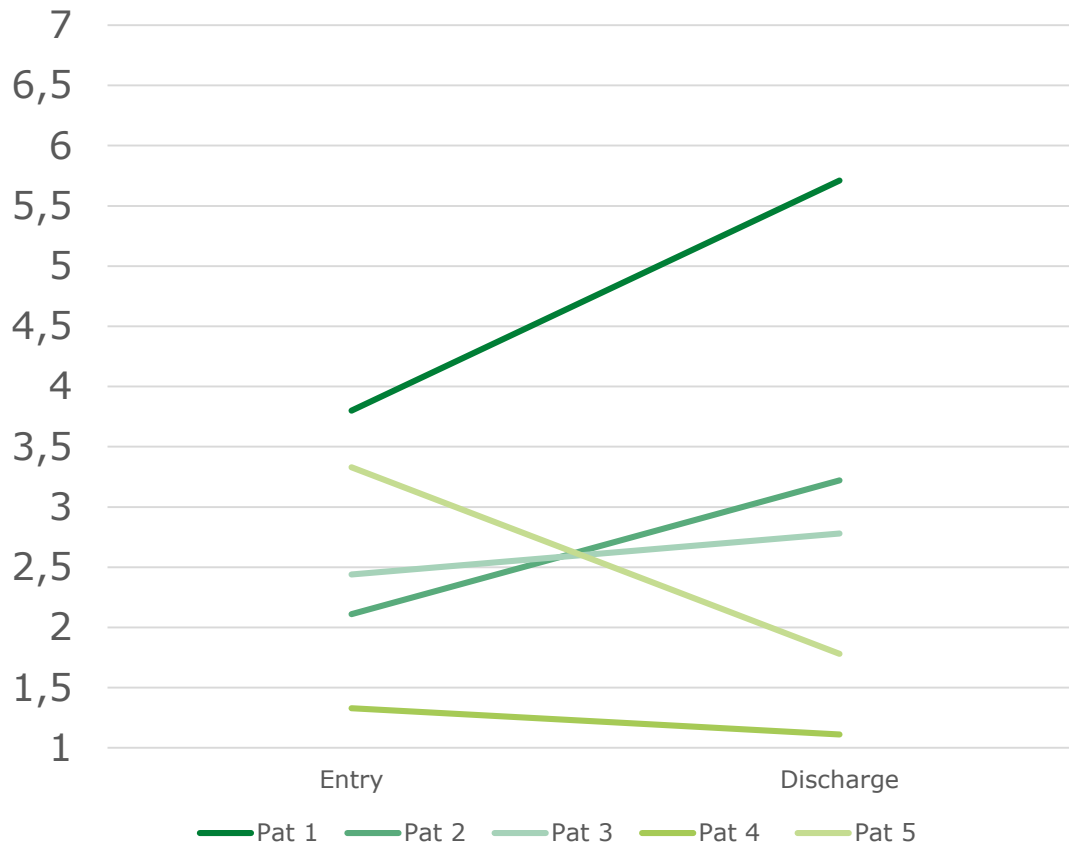
# Multidisciplinary bio-psycho-social rehabilitation Post-Covid-Syndrome, 10 patients

Variable	Value
Age, mean (range)	48 (27 – 64)
Female, N	7
<b>Main Problems</b>	
Fatigue, N	10
Cognitive problems , N	10
Depression, N	9
Sleep disorder, N	8
Olfactory disorder, N	2

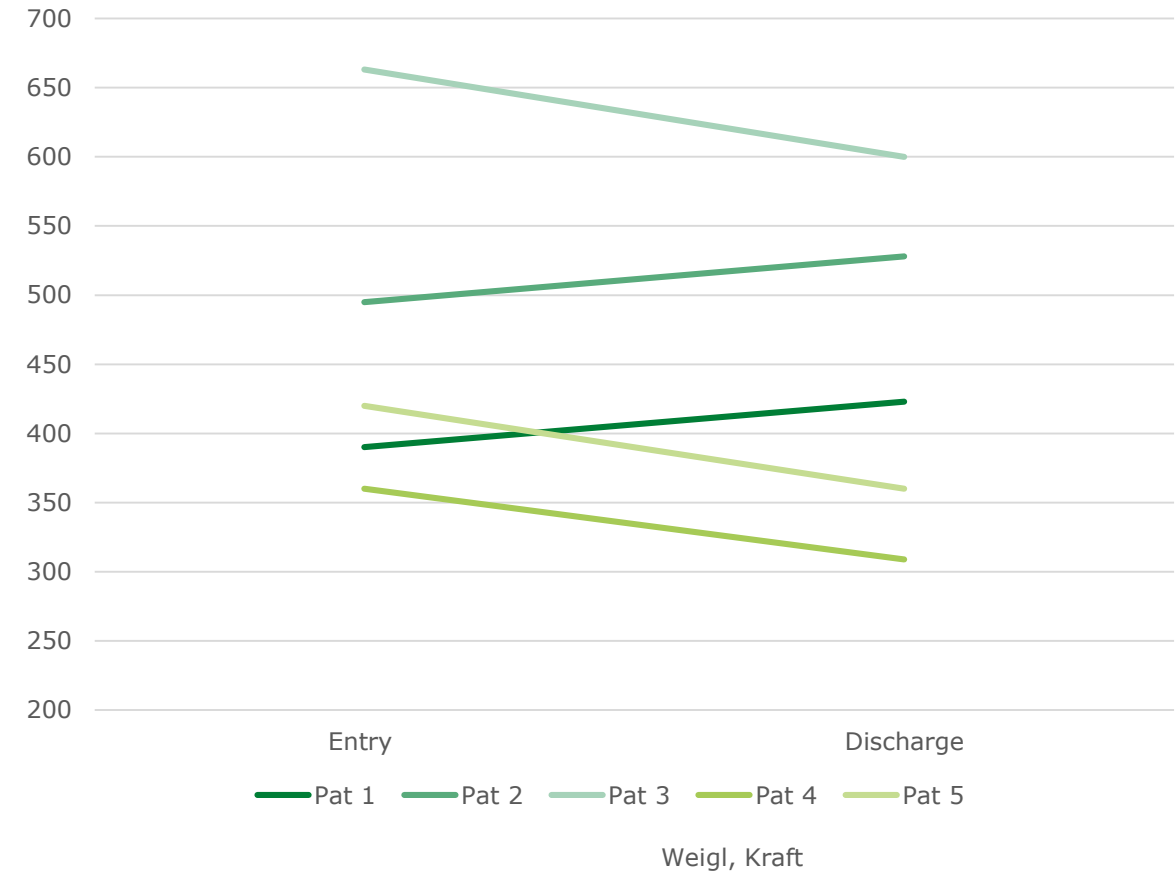
# Multidisciplinary bio-psycho-social rehabilitation Post-Covid-Syndrome

## Pilot results

Fatigue Severity Scale (7 = Best; 1= worst)



6 - min Walk (Meter)



# The Bavarian Minister of Health visited the Post-Covid-Syndrome Day-Clinic

AZ München Bayern Sport Promis TV Politik Panorama Kultur Mehr

Zahnersatz

Kaffeevollautomaten

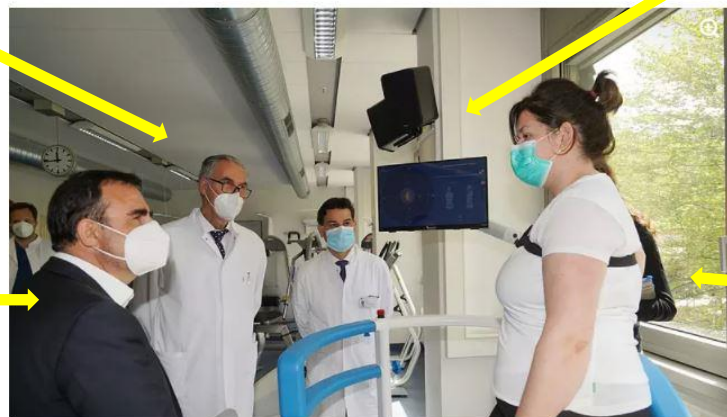
gewinnen. Jetzt mitmachen!

## Long Covid, das neue Volksleiden? Münchner Patienten berichten

Etwa jeder Zehnte, der sich mit Corona infiziert hat, kämpft mit Spätfolgen. Im Klinikum Großhadern der LMU gibt es Hilfe: eine Post-Covid-Ambulanz für schwere Fälle. Zwei junge Patienten berichten.

04. Mai 2022 - 21:12 Uhr | Nina Job

Merken 2 Kommentare 2 Artikel empfehlen Teilen



Training unter Aufsicht: Regina Straub auf dem Robotersystem "Hunova". © Daniel von Loeper

Medical Director of  
LMU-Klinikum:  
Prof. Lerch

Bavarian Minister  
of Health:  
Mr. Holetschek

PD Dr. Eduard Kraft  
PRM  
Senior Physician

Patient

Newspaper: AZ München, 05 May, 2022

# Multidisciplinary bio-psycho-social rehabilitation (MBR)

## New insights 2019 to 2022, Conclusions

- MBR in patients with chronic neck pain
  - MBR is effective in patients with chronic neck pain for at least 12 months
  - Associations between changes in physical and psychological health co-variates and outcomes confirms the bio-psycho-social concept
- MBR in patients with chronic low back pain
  - MBR is effective in patients older than 65 years of age
  - Long-term benefit of MBR supports cost-effectiveness of MBR
- MBR in patients with Post-Covid-Syndrome
  - MBR rehabilitation may be effective in patients with Post-Covid-Syndrom
  - Length of MBR? Best content? Assignment of patients to best-fitting program?



# Thank you

- Stephan Proetzel, Munich
- Franziska Ochsenkuehn, Munich
- Josefine Letzel, Munich
- Felix Angst, Zuzach, Switzerland
- Patients who completed questionnaires
- Karin und Lara

**Thank you**

**For your attention**

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