Multimodal pain management in patients with spinal cord injury

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Overview

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- Meaning of pain in patients with spinal cord injury

- Overview about multimodal pain therapy

- Own pilot project:
  Pain group management program for patients with spinal cord injury

The meaning of Pain following Spinal cord injury

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- High pain prevalence (65–85%), 1/3 have severe pain

- strong relationship between pain and poorer physical, psychological and social functioning

- pain
    - may adversely affect sleep and participation in activities of daily living
    - may contribute to functional disability, associated with loss of mobility
    - reduces the person's capacity to participate in rehabilitation
    - reduced quality of life and life satisfaction and return to work

- the long-term prognosis for pain resolution following SCI is often poor
- pain following SCI continues or even worsens over time

Siddall, Spinal cord, 2009

International Spinal Cord Injury Pain (ISCIP) Classification

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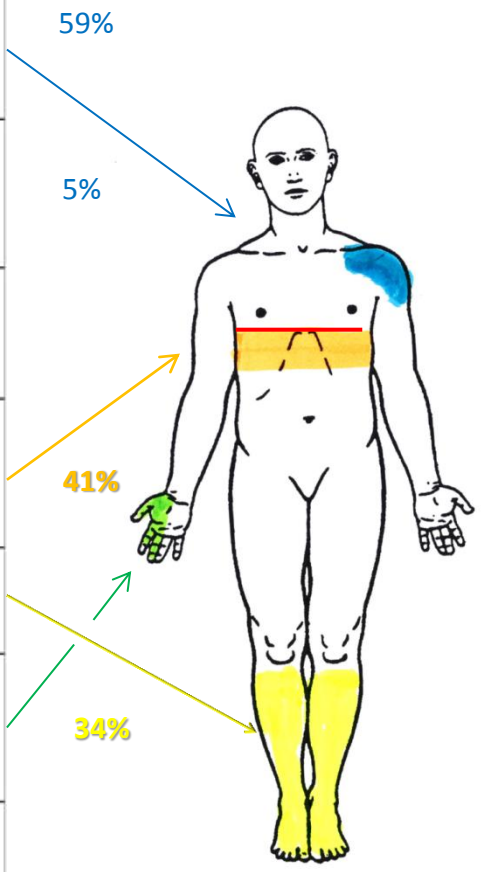
Tier 1: Pain type	Tier 2: Pain subtype	Tier 3: Primary pain source and/or pathology (write or type in)
☐ Nociceptive pain	☐ Musculoskeletal pain	☐ _____ e.g., glenohumeral arthritis, lateral epicondylitis, comminuted femur fracture, quadratus lumborum muscle spasm
	☐ Visceral pain	☐ _____ e.g., myocardial infarction, abdominal pain due to bowel impaction, cholecystitis
	☐ Other nociceptive pain	☐ _____ e.g., autonomic dysreflexia headache, migraine headache, surgical skin incision
☐ Neuropathic pain	☐ At level SCI pain	☐ _____ e.g., spinal cord compression, nerve root compression, cauda equina compression
	☐ Below level SCI pain	☐ _____ e.g., spinal cord ischemia, spinal cord compression
	☐ Other neuropathic pain	☐ _____ e.g., carpal tunnel syndrome, trigeminal neuralgia, diabetic polyneuropathy
☐ Other pain		☐ _____ e.g., fibromyalgia, Complex Regional Pain Syndrome type I, interstitial cystitis, irritable bowel syndrome
☐ Unknown pain		☐ _____

Prevalence data (Sidall, Pain, 2003)



Pain related data
Patients with SCI selected from CPM Nottwil (n=66)

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Pain intensity (maximum NRS):		8.2 (±1.6), 1–10
time since injury (y)		12 (±11.9), 0–44
pain duration	<1 y	13 (20%)
	>1 y	8 (12%)
	>2 ys.	9 (14%)
	>5 ys.	11 (17%)
	>10 ys.	25 (38%)
Amount of different pain types per patient		
	1:	30 (45%)
	2:	26 (39%)
	3 and more:	10 (15%)

Mahnig et al., Spinal cord, 2016

Pain related data
Patients with SCI selected from CPM Nottwil (n=43)

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HADS		
	anxiety	8.6 (±4.7), 0–18
	depression	8.2 (±5.5), 1–19
SF-12		
	physical	29.3 (±9.4), 17.7–50.7
	psychic	42.9 (±12.3), 21.3–66.7
Chronic Pain Severity Questionnaire (von Korff)		
	grade 0–1	n=2 (5%)
	grade 2	n=5 (12%)
	grade 3	n=9 (21%)
	grade 4	n=27 (63%)
Mainz Pain Staging system (MPSS)		
	stadium I	n=4 (9%)
	stadium II	n=17 (40%)
	stadium III	n=22 (51%)

Mahnig et al., Spinal cord, 2016

Bio-psycho-social model

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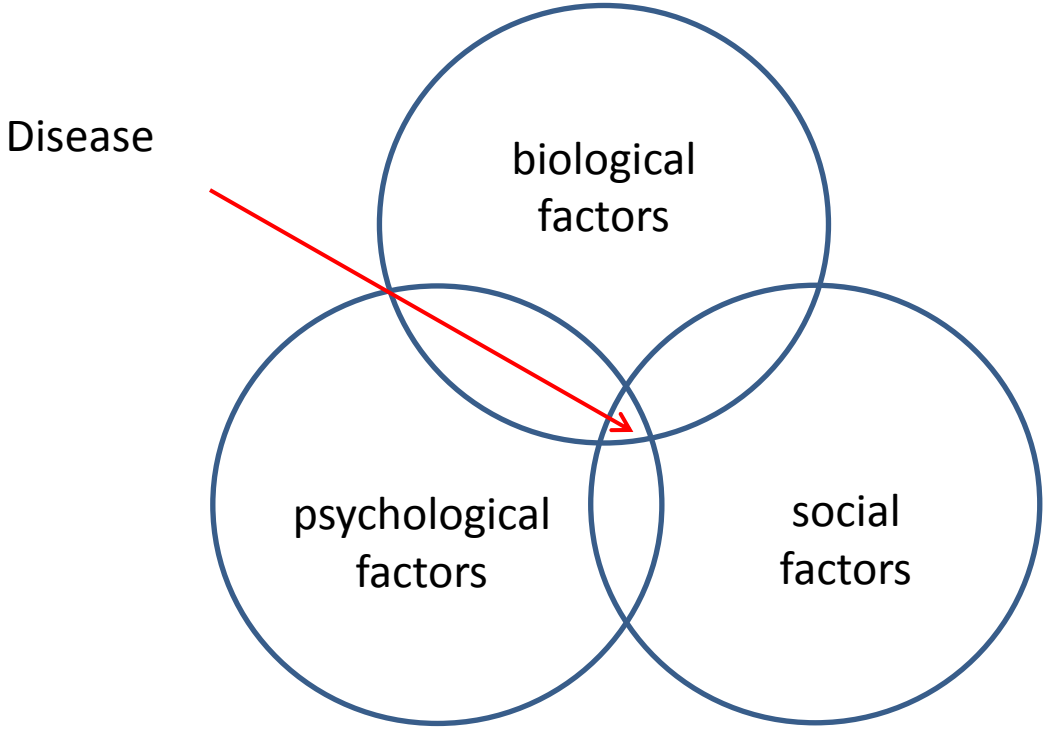

after Engel, Science, 1977

Bio-psycho-social model

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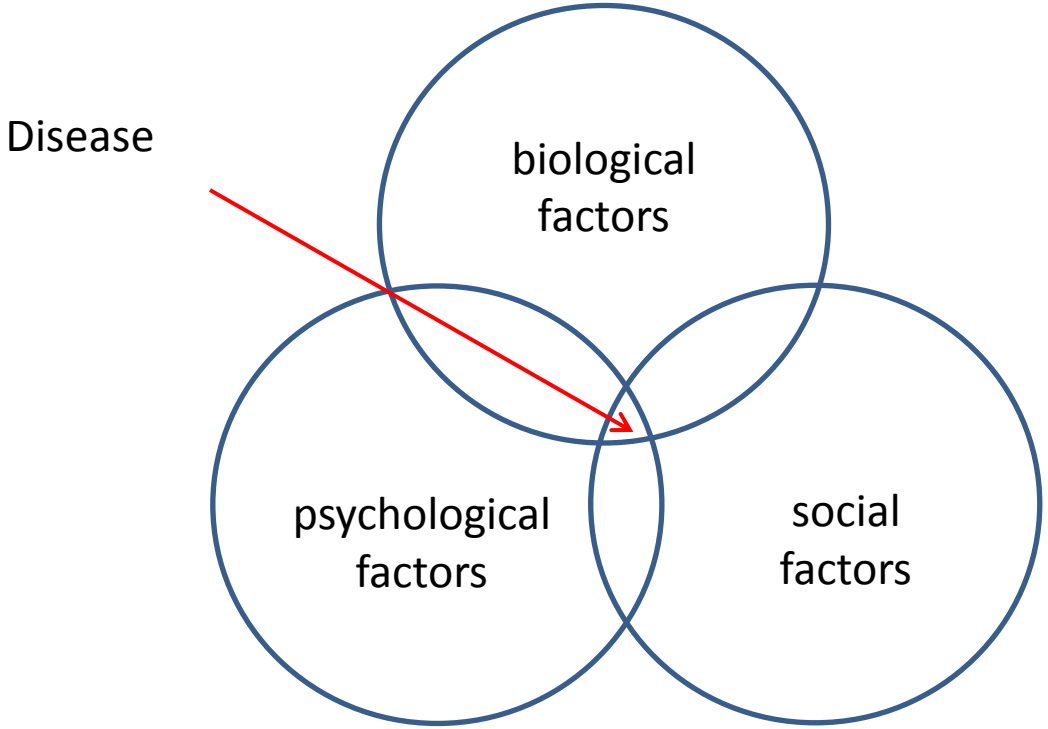

Need for interdisciplinary pain therapy

after Engel, Science, 1977

Modalities of pain therapy in SCI

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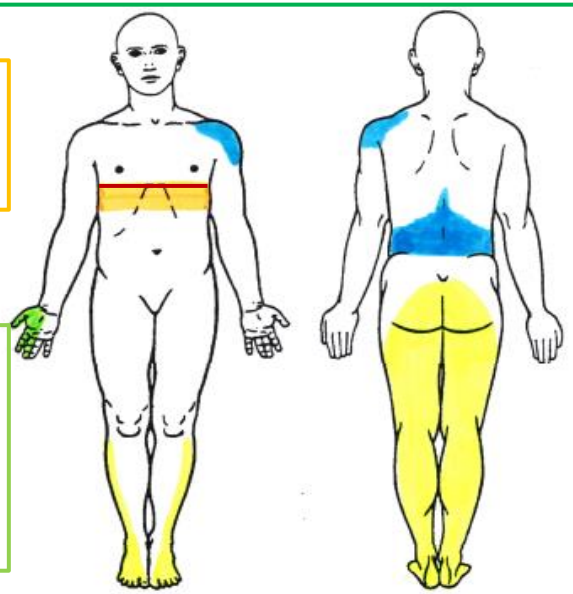
Multimodal pain therapy
Interdisciplinary integration of medical, psychological, physical and other modalities

Therapy of neuropathic pain
- medications
- sensorimotoric activation
- interventional pain therapy



Therapy of nociceptive pain
- improvement of function
- physiotherapeutic techniques
- Occupational therapy
- improvement of wheel chair adaptation
- medications

Psychological pain therapy
cognitive behavioral therapy
coping with pain
pain acceptance
relaxation
education on chronic pain
single-/group setting

Therapy of spasticity associated pain
- physiotherapeutic techniques
- medications
- intrathecal drug administration

Surgical therapy
- structural pathologies of musculoskeletal system
- syringomyelia
- neuromodulation and ablative techniques

- Single-disciplinary
- Multi-disciplinary
- Inter-disciplinary/multi-modal

Modified after Landmann et al., Schmerz, 2017

What is interdisciplinary pain therapy?

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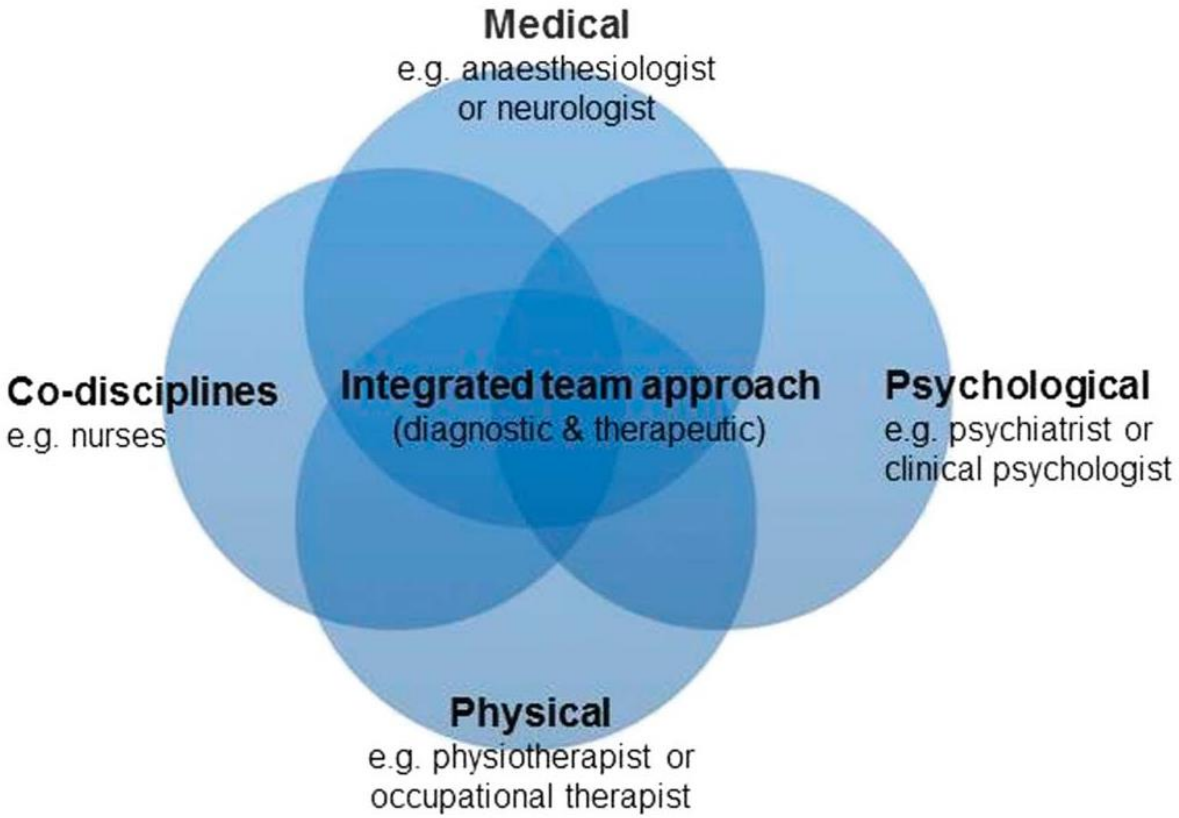

- weak to moderate effects of different multimodal programs have been demonstrated on RCT`s
- higher effectiveness in comparison to routine, control group, waiting list

Kaiser et al., Pain, 2016

Rational for interdisciplinary/multimodal pain therapy programs

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- The outcome of multidisciplinary treatment has been proven to be superior to that of single-discipline treatment in patients with chronic back pain
  Flor et al., Pain 1992

- Multidisciplinary treatment helped to improve pain, mood and return to work and decreases use of the healthcare system
  Flor et al., Pain 1992

- Effectiveness of interdisciplinary cognitive behavioral programs in non-malignant chronic pain has been established
  Morley et al., Pain, 1999;Guzman et al., Br Med J 2001

Multimodal pain therapy programs in SCI

Author	Program duration	Total amount	Number of patients	Pain diagnosis	content	outcome
Cundiff et al., Psychosoc Process, 1995	6 weeks 1h/week	6h			- discussion section - skill development section	- not stated
Norrbrink et al., J Rehabil Med, 2006	10 weeks 2 sessions/w.	50h	27 PMP 11 WL	NeP	- education - behavioral therapy - relaxation - stretching - light exercise - body awareness training	- levels of anxiety and depression decreased - tendency towards better quality of sleep - improvement regarding sense of coherence and depression
Perry et al., Clin J Pain, 2010	10 sessions	45h	19 PMP 17 UC	NeP	- education - training self-management - relaxation skills - desensitization skills - goal setting - pacing upgrading of activities - cognitive restructuring - exercise, stretch - relapse management	- Improvements in anxiety and pain catastrophizing
Heutink et al., J Rehabil Med, 2012	11 sessions	33h	61 randomised PMP WL	NeP	- educational - cognitive - behavioral elements	lasting improvements on - pain intensity - pain-related disability - anxiety - participation in activities
Burns et al., PMR, 2013	10 weeks 2 sessions/w	50h	22 PMP	NeP	- education on chronic pain - cognitive behavioral therapy - self management strategies	- no reduction of pain severity - can help cope with pain - lessen interference of pain - improve their sense of control

Own experiences with group pain programs in unspecific chronic low back pain

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Setting

- 1-week intensive outpatient multimodal group program
- 34h program
- 8-12 patients per group

Results:

On average a significant improvement of all parameters after 3 and 12 months could be demonstrated for pain severity, quality of life, pain-related disability, depression and pain acceptance

Reck et al., Schmerz, 2017

Group Pain Management Program for Patients with Pain following Spinal cord Injury - *a pilot project*

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Setting

- Duration: 1 week
- 28h program
- 6 ± 2 patients per group
- Project started: January 2017, ongoing
- Pain diagnoses: neuropathic and nociceptive pain (according Bryce et al. 2012)

Group Pain Management Program SCIP
Flow chart - *a pilot project*

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Time	Monday	Tuesday	Wednesday	Thursday	Friday
9.00-09.30	Welcome Introduction team and participants	Morning feeback round Medical education: Neurological aspects of spinal cord injury	Morning feeback round Medical education: Diagnostic aspects of pain	Morning feeback round Medical education: Therapeutic aspects of pain	Morning feedback round Psychology: Problem solving training
9:30-10.00					
10.00-10.30	Break				Break
10:30-11:00	Medical education: Biomechanical aspects of the shoulder in context of sitting posture	Physio- and occupational therapy: Spasticity Sitting position & sitting ergonomy	Physiotherapy: Mindfulness	Break	Psychology: Relaxation Training
11.00-11.30				Physiotherapy: Medical training therapy	
11.30-12.00	Physiotherapy: Shoulder				Physiotherapy: Mindfulness
12.00-12.30					
12:30-14:00	Lunch break / resting time				
14:00-14:30	Psychology: Basic principles of pain	Psychology: Pain acceptance	Psychology: Pain and stress	*Psychology: Exessive/ underchallenged demands*	Final feedback-Round: Team and participants
14:30-15:00					
15:00-15:30	Break				End about 3.30pm
15:30-16:00	Psychology: Relaxation therapy	Psychology: Relaxation therapy	Psychology: Relaxation therapy	Psychology: Relaxation therapy	
16:00-16.30					

Conclusion

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- Chronic pain following spinal cord injury is a frequent and relevant health problem

- The occurrence of multiple pain types and mechanisms in the presence of the bio-psycho-social model counts for a multimodal pain therapy in this cohort

- Increasing evidence, that pain management group programs in patients with SCI show improvement in several pain related variables

- The implementation of our Group pain management program for patients with spinal cord injury reflects actual knowledge and closes a gap in our treatment

Thanks to the team and collaborators

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Thank you very much!