



SOCIETÀ ITALIANA
G.U.I.D.A.

PER LA GESTIONE UNIFICATA E INTERDISCIPLINARE
DEL DOLORE MUSCOLO-SCHELETRICO E DELL'ALGODISTROFIA

I CONGRESSO NAZIONALE

NAPOLI *9-11 marzo 2017*

IL DOLORE NELL'OSTEOARTROSI

Francesca Gimigliano

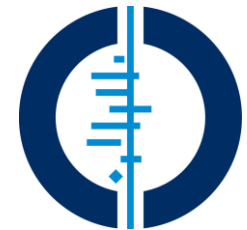
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Il dolore nell'osteoartrosi

- L'artrosi è la causa principale di dolore muscoloscheletrico e di limitazione funzionale negli anziani.
- In genere non sussiste una diretta correlazione tra la severità del danno strutturale di natura artrosica e la severità della sintomatologia dolorosa manifestata.
- In pazienti con artrosi il problema reale, sia per il medico che per il paziente, non è la stadiazione radiografica della patologia artrosica ma la sintomatologia dolorosa associata.

Peat G, Ann Rheum Dis, 2001

Kenneth D. Brandt, Ann Rheum Dis, 2001



Il dolore nell'osteoartrosi

Intially

- Pain in OA joints occurs episodically during movements and loading of the joint (hyperalgesia), and may be evoked by specific activities.
- These are typical features of nociceptive pain.

At later stages

- Constant resting pain may occur, even at night.
- There seems to be a gradual increase of pain with OA progress.

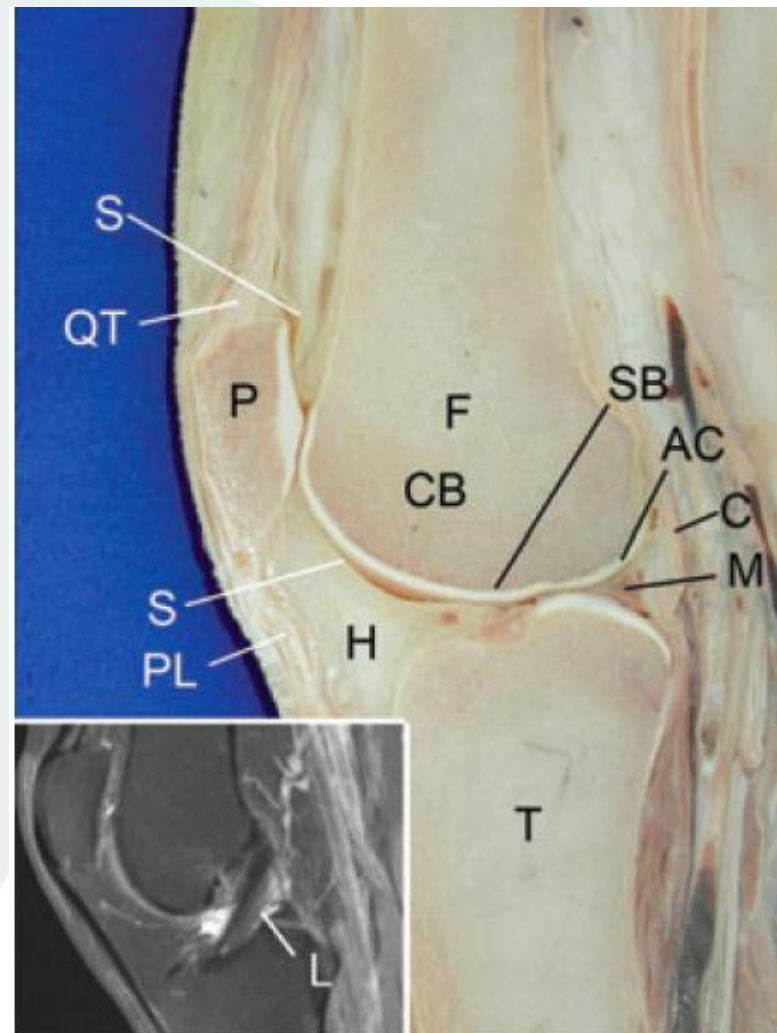
At advanced stages

- Depressive symptoms and sleep disorders may occur.
- OA pain may occur together with pain at other locations and neurological disturbances.

Classificazione dell'osteoartrosi

Type of OA	Recognized causes
Chondrogenic OA	Traumatic cartilage injury Hereditary genetic disorders or chondrodysplasias
Ligamentogenic (and enthesogenic) OA	Trauma, e.g. ACL rupture Generalized nodal OA – hand involvement Cervical spondylosis Lumbar spondylosis DISH
Meniscogenic OA	Primary meniscal degeneration Meniscal extrusion Root horn tears
Synoviogenic OA	Inflammatory, e.g. crystal-, CPPD-, urate- and BCP-related Secondary to inflammatory arthritis
Osteogenic OA	Neuropathic joint disease Avascular necrosis Bony dysplasia Joint fracture Paget's disease
Mixed pattern disease – 'multifocal'	Proportion of age-related disease with serial insults to different joint structures

Mc Gonalgle et al J. Anat. 2010



Meccanismi del dolore nell'osteoartrosi

Il dolore nell'artrosi deriva presumibilmente da una combinazione di vari fattori:

- Coinvolgimento periostale da osteofitosi
- Congestione vascolare dell'osso subcodrale con aumento della pressione intraossea
- Sinovite con stimolazione di nocicettori di membrana
- Fatica nei muscoli che attraversano l'articolazione
- Retrazione capsulare
- Idrartro con stretching capsulare
- Torn meniscale
- Borsiti periarticolari
- Spasmo dei muscoli periarticolari
- Fattori psicologici

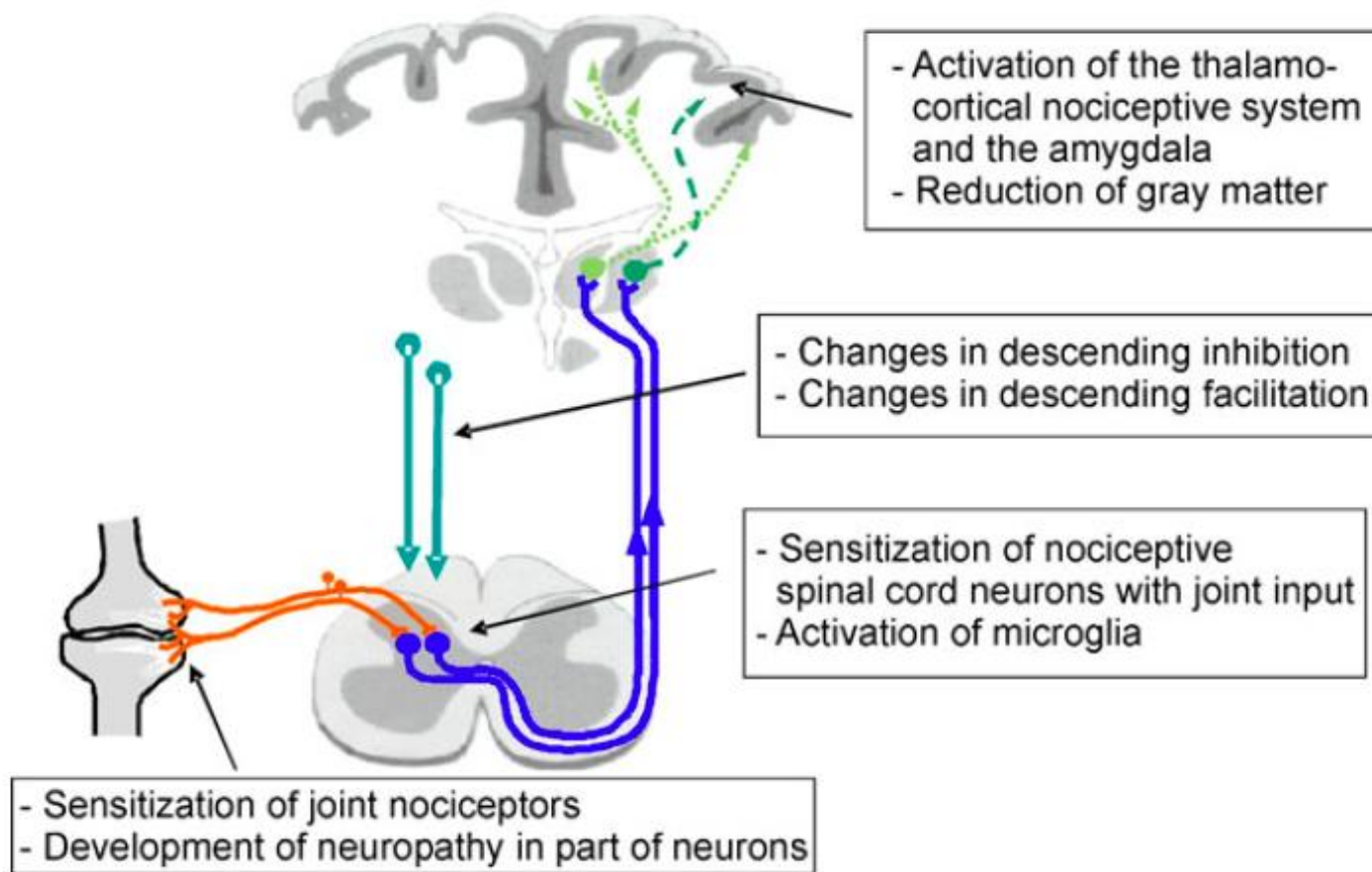
Il dolore nell'osteoartrosi

- Va considerato che le componenti psicologiche come ansia e depressione possono essere indici predittivi del dolore artrosico più della stessa severità del danno presente alla radiografia.

Summers MN et al. Arthritis Rheum, 1988

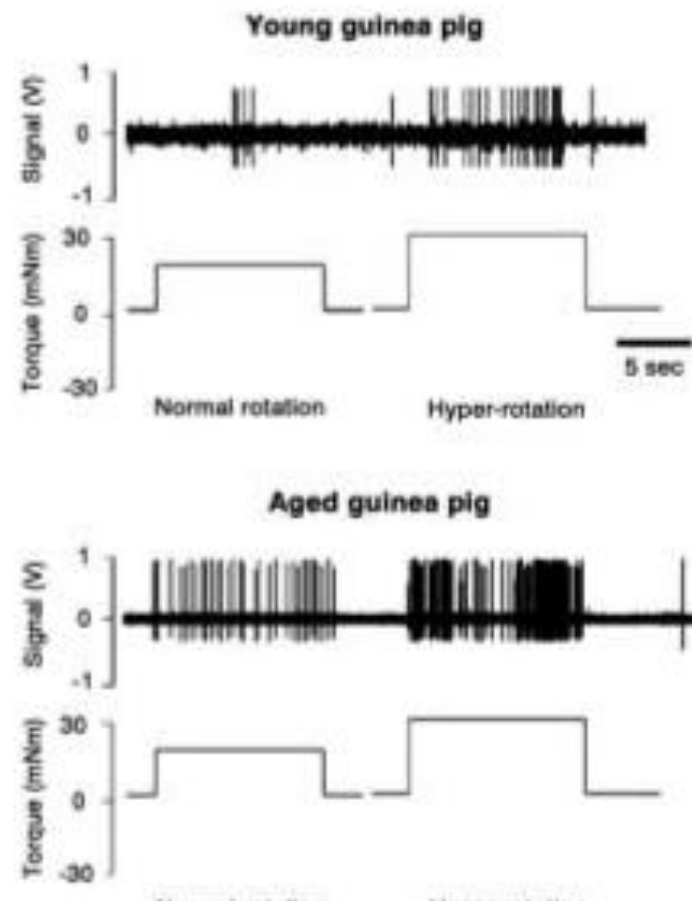


Sistema nocicettivo



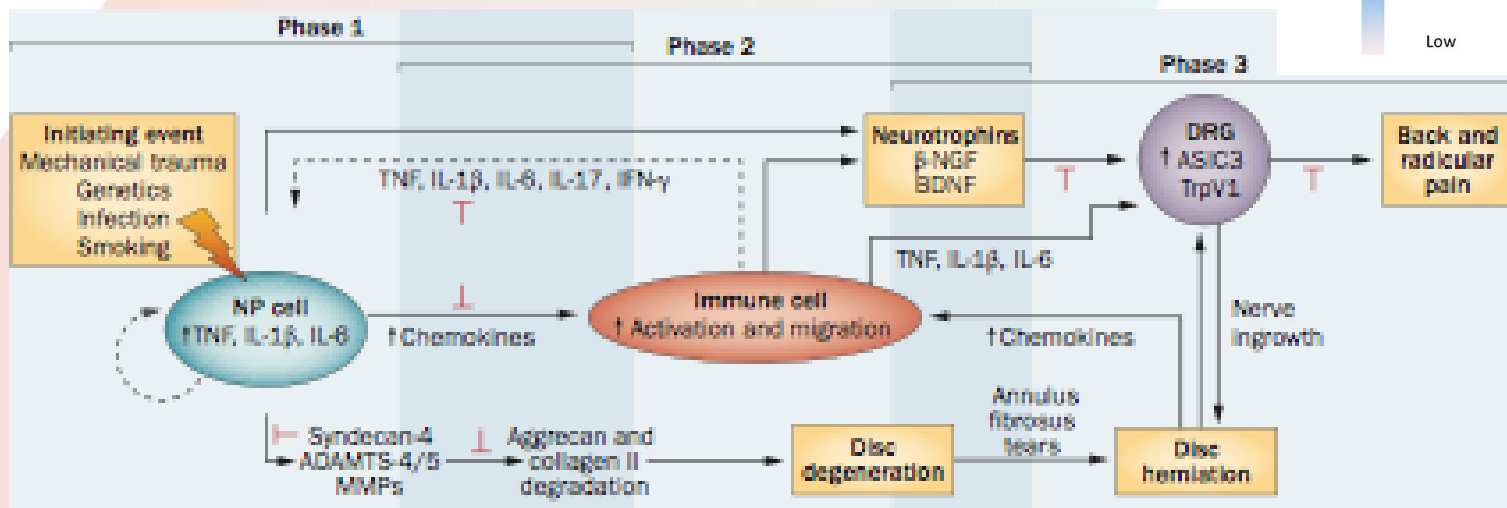
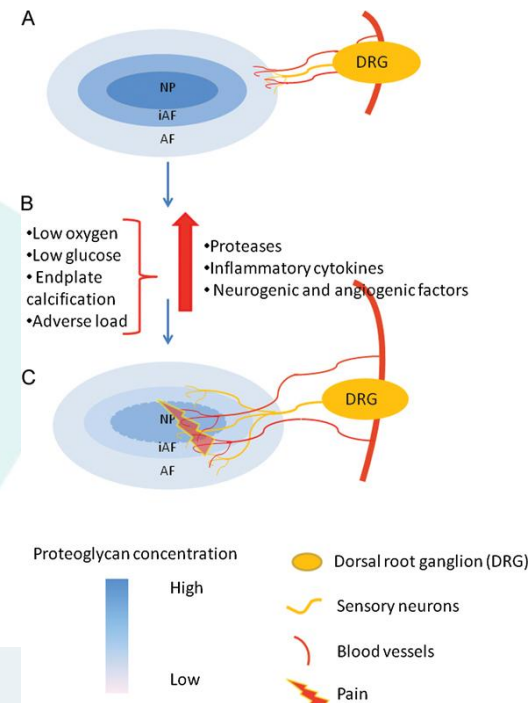
Joint mechano-sensitivity and nociception

Mechanosensory nerves become sensitized during OA causing an increase in afferent firing rate even in response to normal joint movement



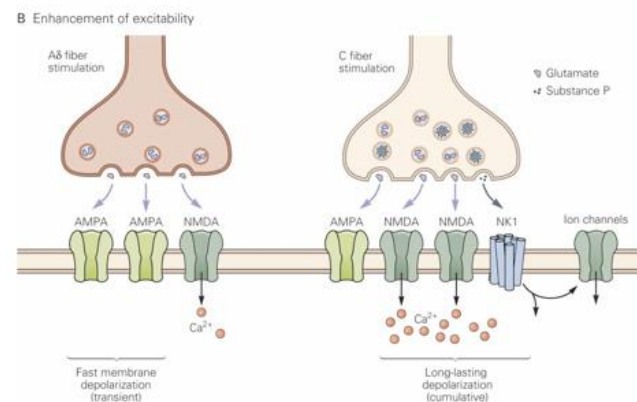
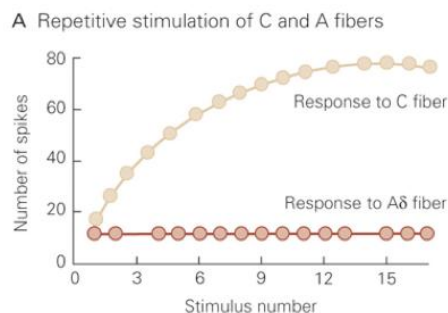
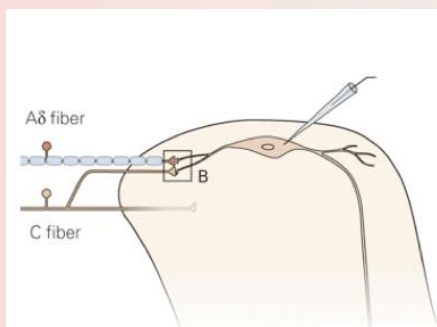
Inflammatory pain

- Activation and sensitization of nociceptors by inflammatory mediators
- NGF
- Cytokines
- Sodium Channel



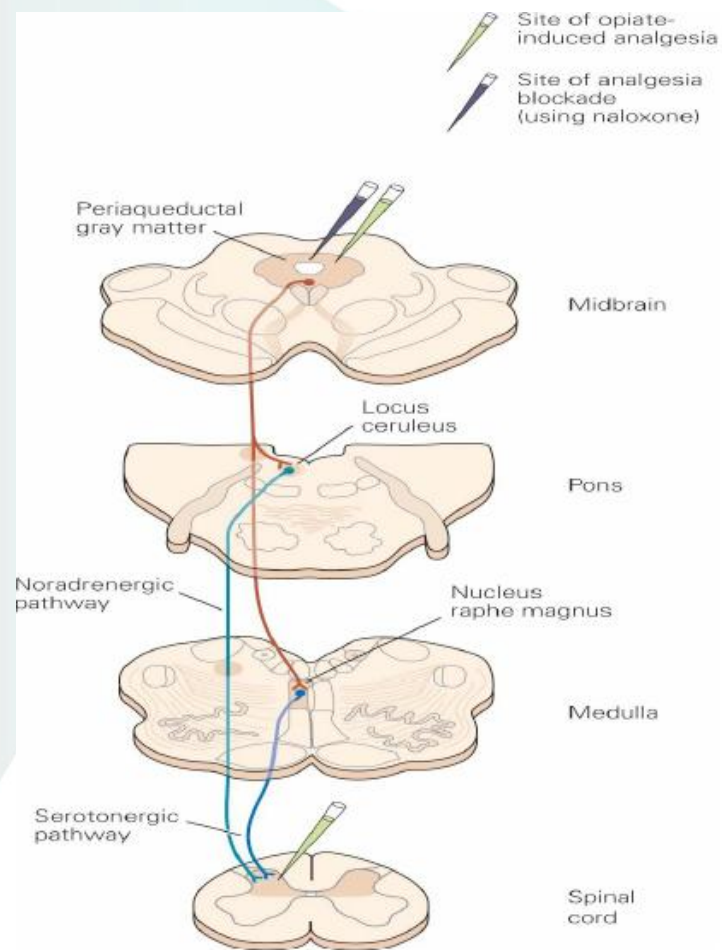
Central sensitization

- Pathological neuronal input from the joint causes complex changes in the central nervous system, which are called central sensitization.
- In the state of central sensitization, nociceptive neurons at different levels of the neuraxis are hyperexcitable, and hence, the nociceptive processing is amplified.
- Central sensitization has spinal and supraspinal components.



Meccanismi corticali per la processazione del dolore

- Sostanza grigia peri-acqueduttale
- Vie discendenti monoaminergiche che regolano i neuroni della via nocicettiva a livello midollare
- Una via serotoninergica nasce dal rafe magnus e proietta alle corna dorsali attraverso il funicolo dorso-laterale
- Una via noradrenergica nasce dal locus coeruleus, da altri nuclei pontini ed dal midollo
- Queste vie discendenti inibiscono i neuroni nocicettivi attraverso connessioni dirette o mediante interneuroni dello strato superficiale delle corna dorsali

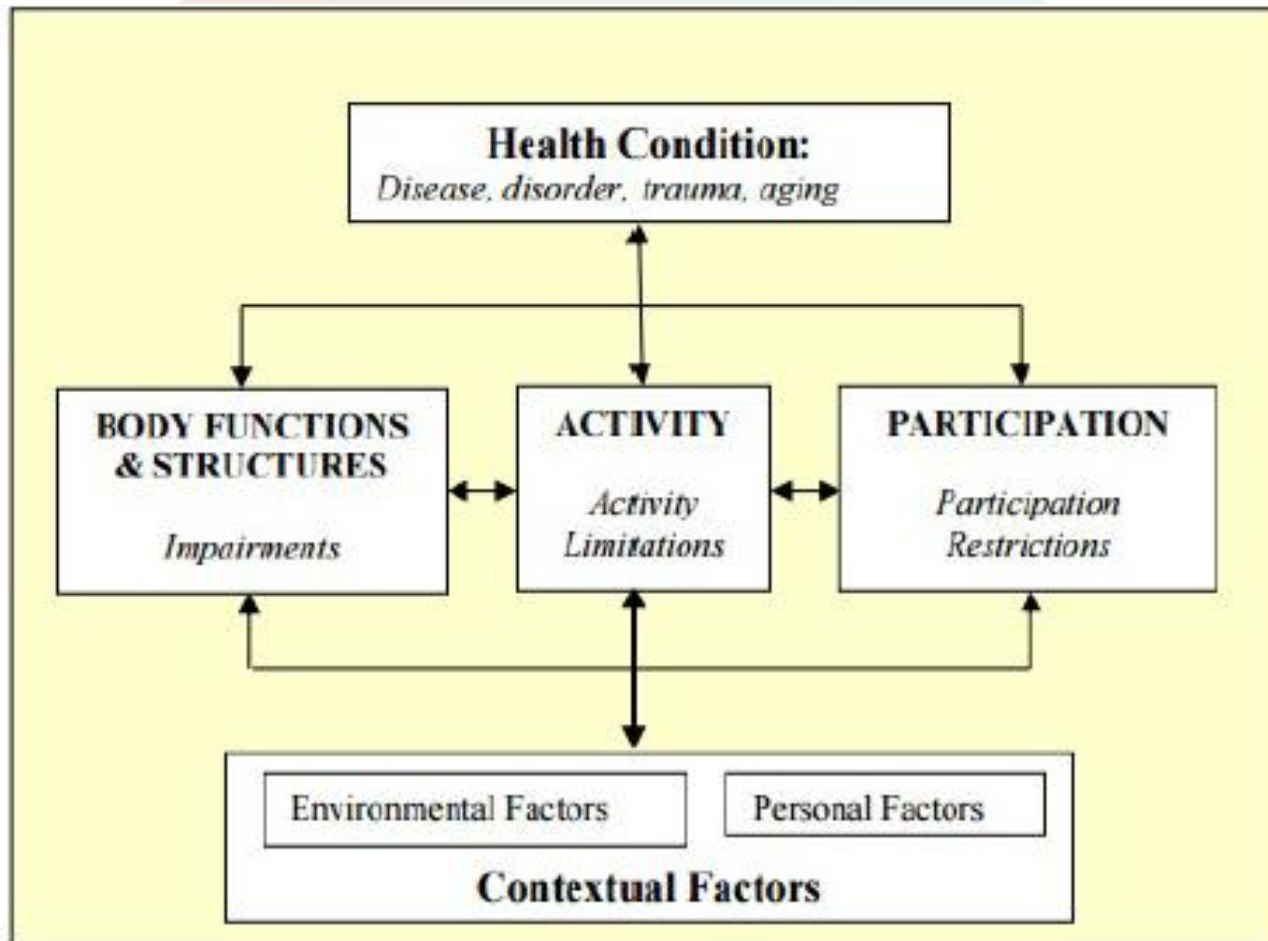


A classification of chronic pain for *ICD-11*

Rolf-Detlef Treede^a, Winfried Rief^b, Antonia Barke^{b,*}, Qasim Aziz^c, Michael I. Bennett^d, Rafael Benoliel^e, Milton Cohen^f, Stefan Evers^g, Nanna B. Finnerup^h, Michael B. Firstⁱ, Maria Adele Giamberardino^j, Stein Kaasa^k, Eva Kosek^l, Patricia Lavand'homme^m, Michael Nicholasⁿ, Serge Perrot^o, Joachim Scholz^p, Stephan Schug^q, Blair H. Smith^r, Peter Svensson^{s,t}, Johan W.S. Vlaeyen^{u,v}, Shuu-Jiun Wang^w

- | | |
|--|---|
| 1. Chronic primary pain | 1. Chronic musculoskeletal pain from persistent inflammation |
| 2. Chronic cancer pain | 2. Chronic musculoskeletal pain from structural osteoarticular changes |
| 3. Chronic postsurgical and posttraumatic pain | 3. Chronic musculoskeletal pain due to disease of the nervous system |
| 4. Chronic neuropathic pain | 4. Chronic nonspecific musculoskeletal pain |
| 5. Chronic headache and orofacial pain | 5. Other chronic musculoskeletal pain syndromes |
| 6. Chronic visceral pain | 6. Chronic musculoskeletal pain not otherwise specified |
| 7. Chronic musculoskeletal pain | |

International Classification of Functioning, Disability and Health



b280 Sensation of pain

- Sensation of unpleasant feeling indicating potential or actual damage to some body structure.
- Inclusions: sensations of generalized or localized pain in one or more body part, pain in a dermatome, stabbing pain, burning pain, dull pain, aching pain; impairments such as myalgia, analgesia and hyperalgesia

ICF core set for osteoarthritis

Categories of the component 'body functions':

ICF Code	ICF Category Title
2nd Level	
b130	Energy and drive functions
b134	Sleep functions
b152	Emotional functions
b280	Sensation of pain
b710	Mobility of joint functions
b715	Stability of joint functions
b720	Mobility of bone functions
b730	Muscle power functions
b735	Muscle tone functions
b740	Muscle endurance functions
b760	Control of voluntary movement functions
b770	Gait pattern functions
b780	Sensations related to muscles and movement functions

Categories of the component 'environmental factors':

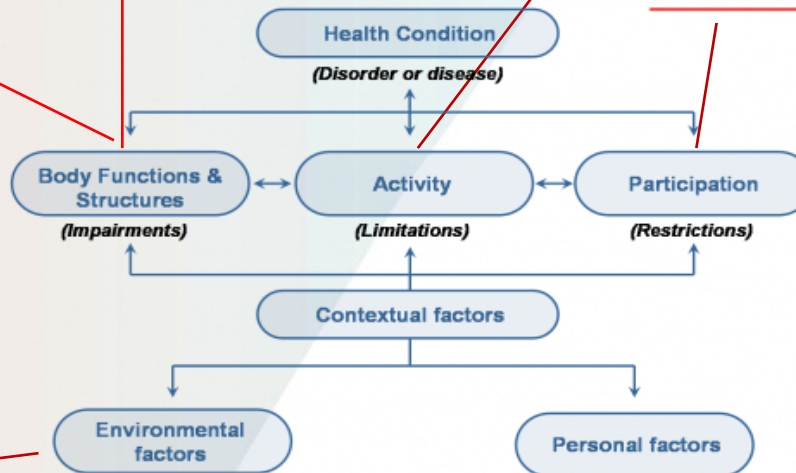
ICF Code	ICF Category Title
2nd Level	
e110	Products or substances for personal consumption
e115	Products and technology for personal use in daily living
e120	Products and technology for personal indoor and outdoor mobility and transportation
e135	Products and technology for employment
e150	Design, construction and building products and technology of buildings for public use
e155	Design, construction and building products and technology of buildings for private use
e225	Climate
e310	Immediate family
e320	Friends
e340	Personal care providers and personal assistants
e355	Health professionals
e410	Individual attitudes of immediate family members
e450	Individual attitudes of health professionals
e460	Societal attitudes
e540	Transportation services, systems and policies
e575	General social support services, systems and policies
e580	Health services, systems and policies

Categories of the component 'body structures':

ICF Code	ICF Category Title
s720	Structure of shoulder region
s730	Structure of upper extremity
s740	Structure of pelvic region
s750	Structure of lower extremity
s770	Additional musculoskeletal structures related to movement
s799	Structures related to movement, unspecified

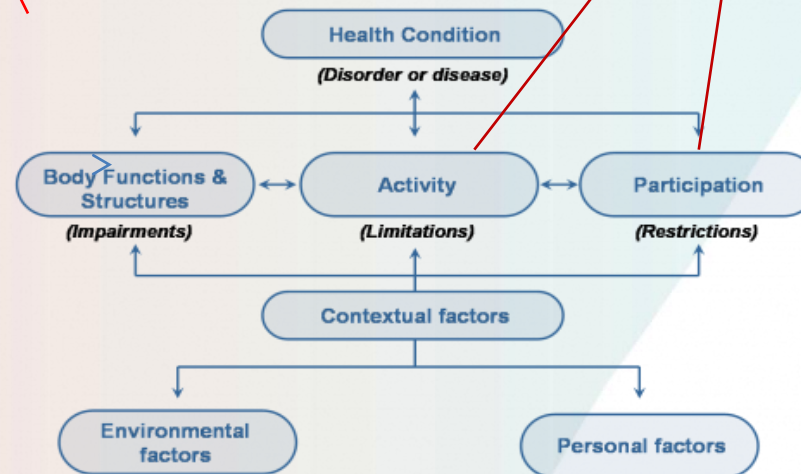
Categories of the component 'activities and participation':

ICF Code	ICF Category Title
d410	Changing basic body position
d415	Maintaining a body position
d430	Lifting and carrying objects
d440	Fine hand use
d445	Hand and arm use
d450	Walking
d455	Moving around
d470	Using transportation
d475	Driving
d510	Washing oneself
d530	Toileting
d540	Dressing
d620	Acquisition of goods and services
d640	Doing housework
d660	Assisting others
d770	Intimate relationships
d850	Remunerative employment
d910	Community Life
d920	Recreation and leisure



b130 Energy and drive functions
 b134 Sleep functions
 b147 Psychomotor functions
 b152 Emotional functions
 b1602 Content of thought
 b280 Sensation of pain
 b455 Exercise tolerance functions
 b730 Muscle power functions
 b760 Control of voluntary movement functions

d175 Solving problems
 d230 Carrying out daily routine
 d240 Handling stress and other psychological demands
 d430 Lifting and carrying objects
 d450 Walking
 d640 Doing housework
 d760 Family relationships
 d770 Intimate relationships
 d850 Remunerative employment
 d920 Recreation and leisure



e1101 Drugs
 e310 Immediate family
 e355 Health professionals
 e410 Individual attitudes of immediate family members
 e570 Social security services, systems and policies

BRIEF ICF CORE SETS for CHRONIC WIDESPREAD PAIN

A. Cieza et al. ICF Core Sets for chronic widespread pain. J Rehabil Med 2004

Minimal Generic Set

Cieza et al. *BMC Public Health* 2014, **14**:218
<http://www.biomedcentral.com/1471-2458/14/218>



RESEARCH ARTICLE

Open Access

Towards a minimal generic set of domains of functioning and health

Alarcos Cieza^{1,2,3,4*}, Cornelia Oberhauser^{2,4}, Jerome Bickenbach^{3,4,6}, Somnath Chatterji⁵ and Gerold Stucki^{3,4,6}

Minimal Generic Set

b130	Energy and drive functions
b152	Emotional functions
b280	Sensation of pain
d230	Carrying out daily routine
d450	Walking
d455	Moving around
d850	Remunerative employment

Conclusions

- We begin to get insights into the potential sources and the neuronal mechanisms of OA pain.
- It remains a challenge, however, to explore in the OA joint, as well as in the nervous system, the sequence of events that cause initial OA pain and lead to progression of OA pain.
- This also implies defining the nature of OA pain (inflammatory, neuropathic, something else?) at different stages, and such knowledge may provide a rationale for using different types of drugs and nonpharmacological treatments.

Thank you!

“When I see a patient with arthritis coming in the front door, I leave by the back door.”

Sir William Osler





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