



LABORATORY FOR INTEGRATIVE  
AND TRANSLATIONAL RESEARCH  
IN POPULATION HEALTH



EPIUnit  
EPIDEMIOLOGY  
RESEARCH UNIT



Raquel Lucas  
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# Population design of musculoskeletal health and disease

Context and plans for the future



# Team

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Elisa Rodrigues (co-supervision with FADEUP)



Our common interests are the **musculoskeletal conditions** with the highest population disability burden, i.e. **chronic musculoskeletal pain** conditions and **bone fragility**.

**Conceptually**, we bring together **material, spatial and subjective dimensions of musculoskeletal health** in different stages of life, mostly through population-based studies.

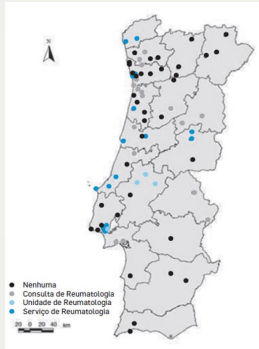
**Etiologically**, we explore **individual and contextual influences that shape the development of common musculoskeletal conditions**, with a particular focus on pain syndromes.

Starting from population-based epidemiology, we extend this approach to the interfaces with **clinical rheumatology, imaging methods, occupational/school health, and public policy**.



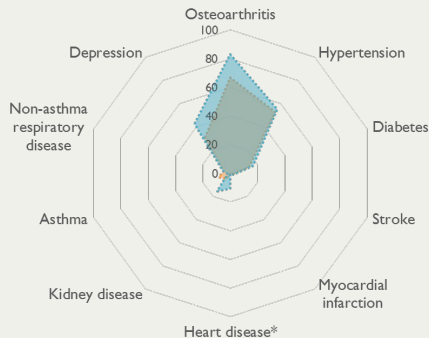
# Where we came from

# ONDOR, RMDs



Synthesis of the **burden of rheumatic conditions and related healthcare use** in Portugal and **monitoring of the national policy** for rheumatic diseases (ONDOR, funding via SPR/FMUP)

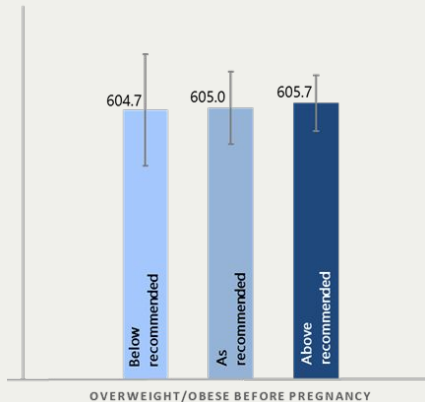
Rheumatic and musculoskeletal disorders as a **contributor to multimorbidity** in the general population



**Prognosis markers** among patients with immune-mediated rheumatic diseases

RL, LC, DS, IC + Teresa Monjardino

## Bone properties and fragility fractures



**Body size/composition and bone physical properties:** pregnancy, childhood, adolescence and adult life (PTDC/SAU-ESA/108407/2008)

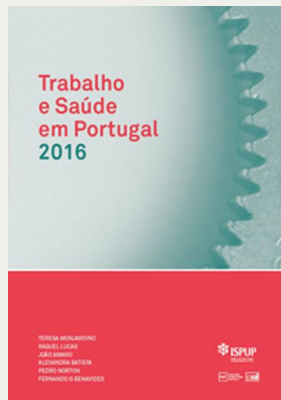
**Growth, bone mass and sagittal standing posture** in childhood (EXPL/DTP-EPI/0280/2012)

Usefulness of different **imaging methods and biomarkers** to estimate **bone mass and fracture risk**

Fragility fractures secular **trends** and **clinical outcomes**

LC, LN, RL, RV, NA + TM, Fábio Araújo, Ana R Martins, Poliana Silva

## Work-related musculoskeletal conditions



**Biomechanical and psychosocial work exposures** and musculoskeletal pain in young workers

Occupational health issues among **mothers of young children**

**OMEGA-NET** Network on the Coordination and Harmonisation of European Occupational Cohorts

Musculoskeletal conditions captured from **occupational health routine data** sources

RL, JA, DS + Sara Lourenço, Alexandra Batista, TM



## Chronic musculoskeletal pain

**Regional and widespread pain in young adults: gender and psychosocial contexts**

**Features and tracking of maladaptive pain** since the first decade of life

Defining adverse pediatric pain experiences including (self- and proxy-) reported **history and experimental pain responses**

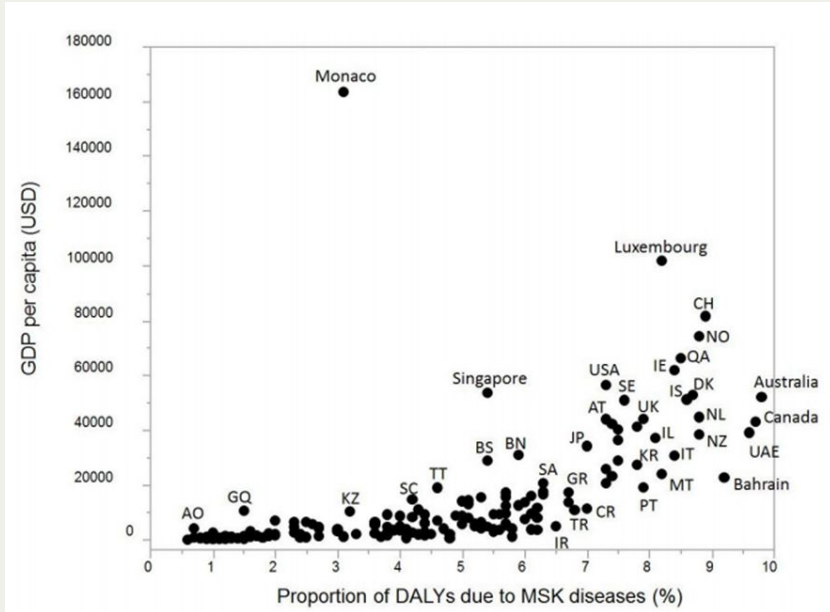
RL, LC, MT, VG, MB, FF + SL, Susana Guimarães



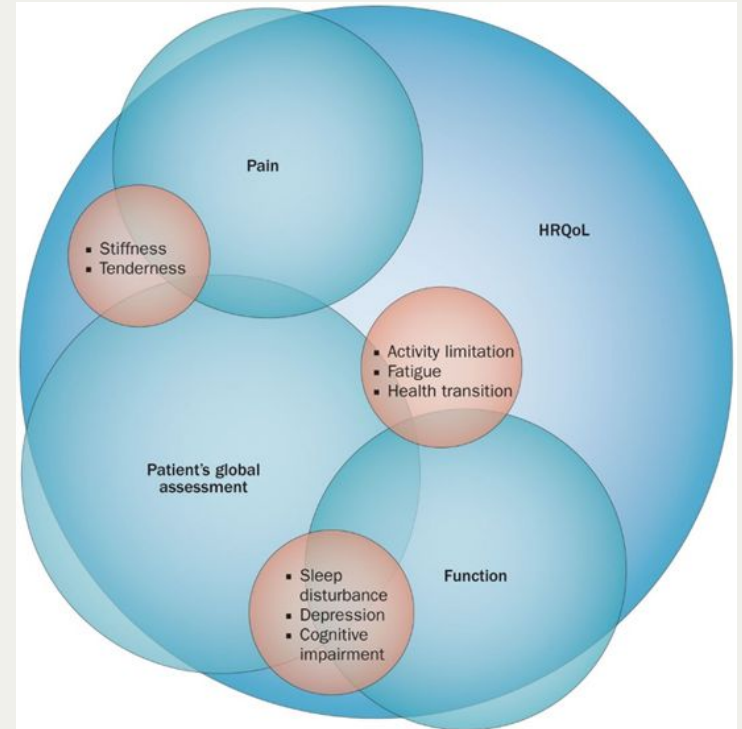


**Where we want to go next**

## Musculoskeletal disorders: a story of pain and disability



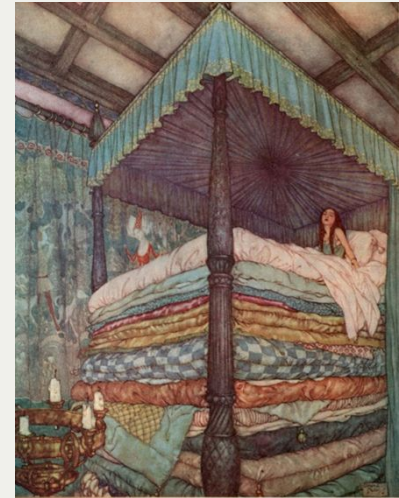
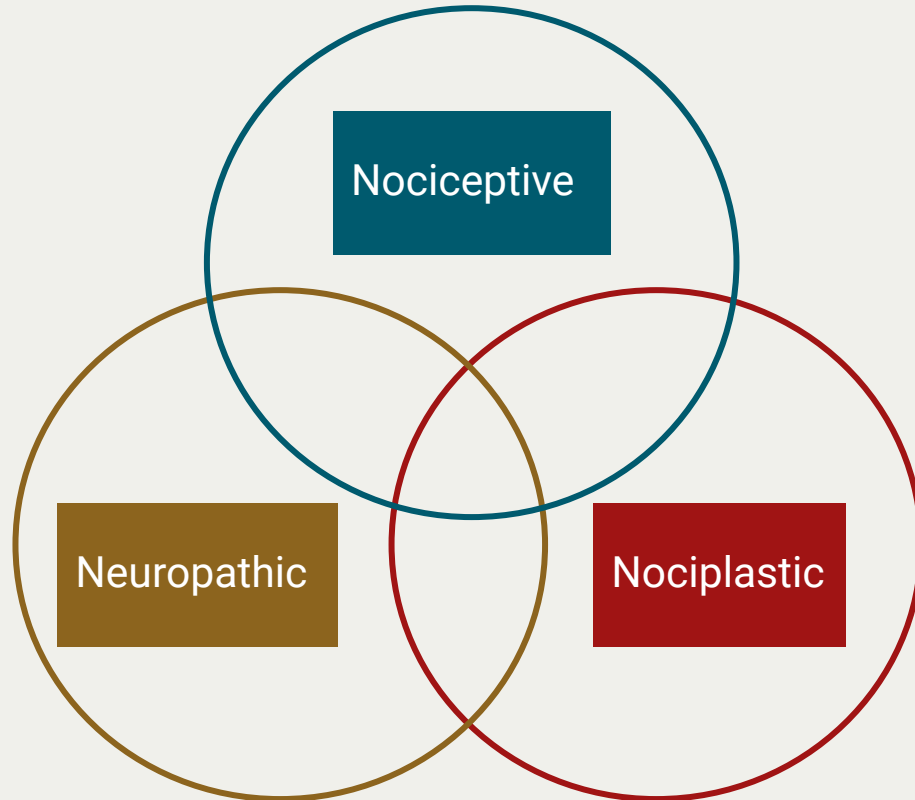
Sebbag, 2019



Van Tuyl, 2015

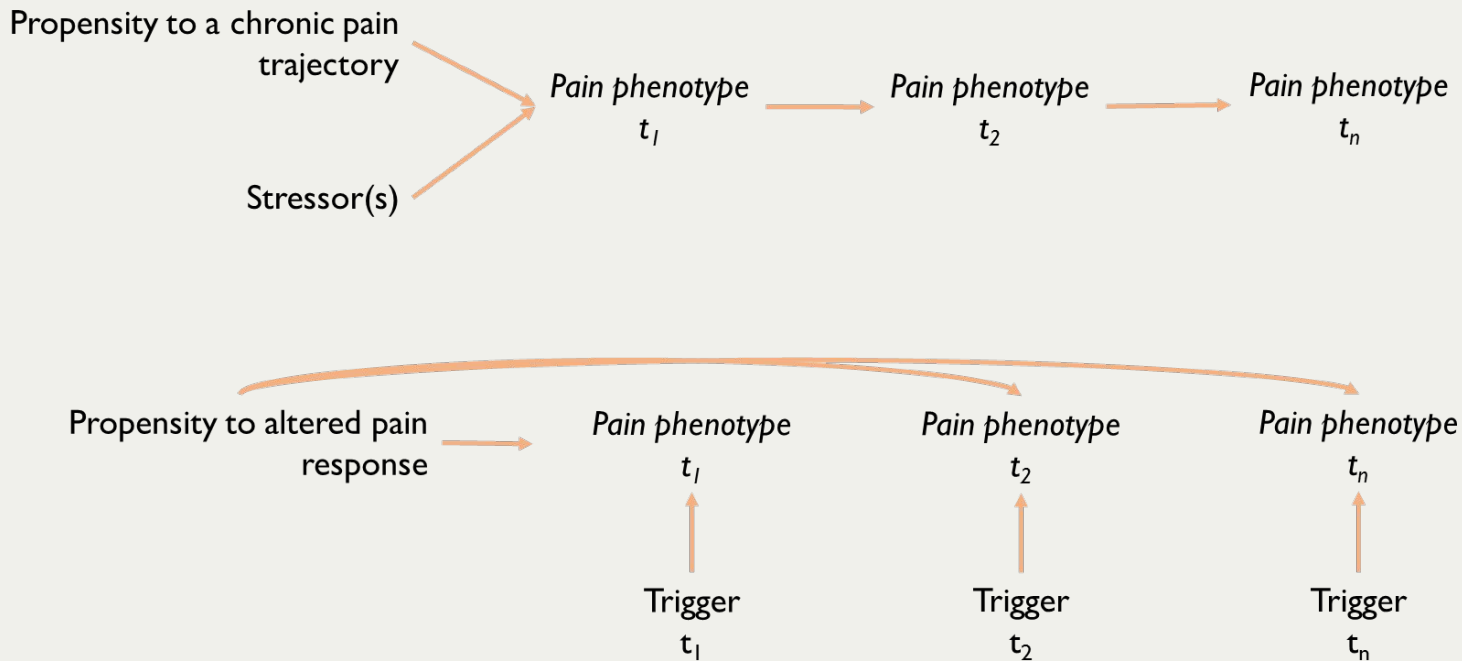


## Rethinking “non-specific” or “primary” musculoskeletal pain





## Chronic musculoskeletal pain as a lifelong phenotype that encompasses disability





**Main goal is to characterize the extent of avoidable physical suffering from chronic musculoskeletal pain in the general population**



## Within the next 3 years:

- Defining **maladaptive musculoskeletal pain** at different stages of life (MT, RL, MB, FF, NN, VG)
- Assessing the relative contribution and timing of **organic/constitutional vs. psychosocial** influences on reported and experimental pain at the population level (FF, LN, NA, ER, JM)



## In 3-5 years:

- Assessing the weight of **nociceptive pain** by comparing pain experiences in chronic **inflammatory joint disease** patients with that of the **general population** during the transition to adulthood (LC, RV, RL, NN)
- Modeling, at an aggregate level, **public policies, health planning and resource allocation** for the prevention and management of chronic low back pain (IC, MV)

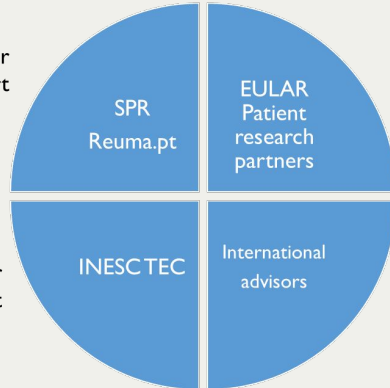


- STEPACHE - The pediatric roots of amplified pain: from contextual influences to risk stratification (**FCT PTDC/SAU-EPI/29087/2017**): **240K**
- “HEALTH-UNORTE: Setting-up biobanks and regenerative medicine strategies to boost research in cardiovascular, musculoskeletal, neurological, oncological, immunological and infectious diseases (**NORTE-01-0145-FEDER-000039**)”: **30K**
- FOREUM - Uncovering musculoskeletal pain susceptibility profiles since childhood by bringing together population and clinical cohorts (**Career Research Grant**): **200K**
  
- COST Action **CA16216** - Network on the Coordination and Harmonisation of European Occupational Cohorts
- Proposal **OC-2021-1-25495** " InfraStructure fOr New Priorities in OccupAtional CohorT ReseArch "





Rheumatology partner  
JIA cohort



Technological partner  
Software development

Co-production: definition of objectives, study design and practical implementation, dissemination of research results

Advisory on major decisions  
International research networks



