Early Knee Osteoarthritis

Conflict of interest

Nothing to declare

Early Knee OsteoArthritis (EKOA)

People affected of knee pain who fulfill knee OA criteria several years later

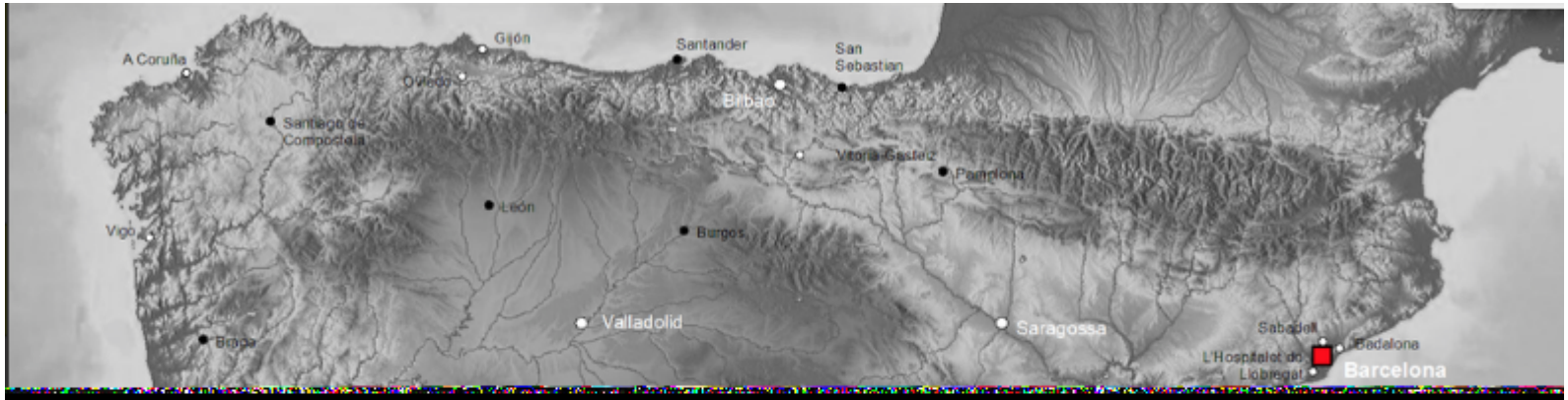
Migliore A et al. The challenge of the definition of ESKOA. Submitted, 2016

Reasons for redefining EKOA

- One of the biggest challenges in academic rheumatology is to explain OA process to medical students
- Even more puzzling are the therapeutic strategies
- Drugs (SYSADOAS) aim to improve pain and structure
  - This dual strategy may be contradictory *in termini*
  - Decreased peripheral sensation on weight-bearing joints leads to neuropathic arthropathy
- Sequential therapies could address weakness and tissue damage during early stages and pain relief in advanced OA

Roman-Blas J et al. Expert Opinion on Pharmacotherapy: 10.1080/14656566.2016.1201070

Similarities between Guadiana river and osteoarthritis



Two courses

Guadiana:
A river´s basin from its source up to the sea

Osteoarthritis:
A progressing process since the initiation of the disease to a final outcome

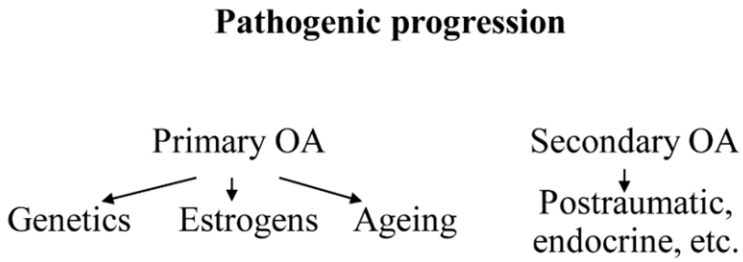
The source of the Guadiana river lies in the center of Spain, about 1.000 meters above the sea level

Kilometers down the river, water flows undergo a subterranean path…

…emerging kilometers away, in the so-called “Ojos del Guadiana”

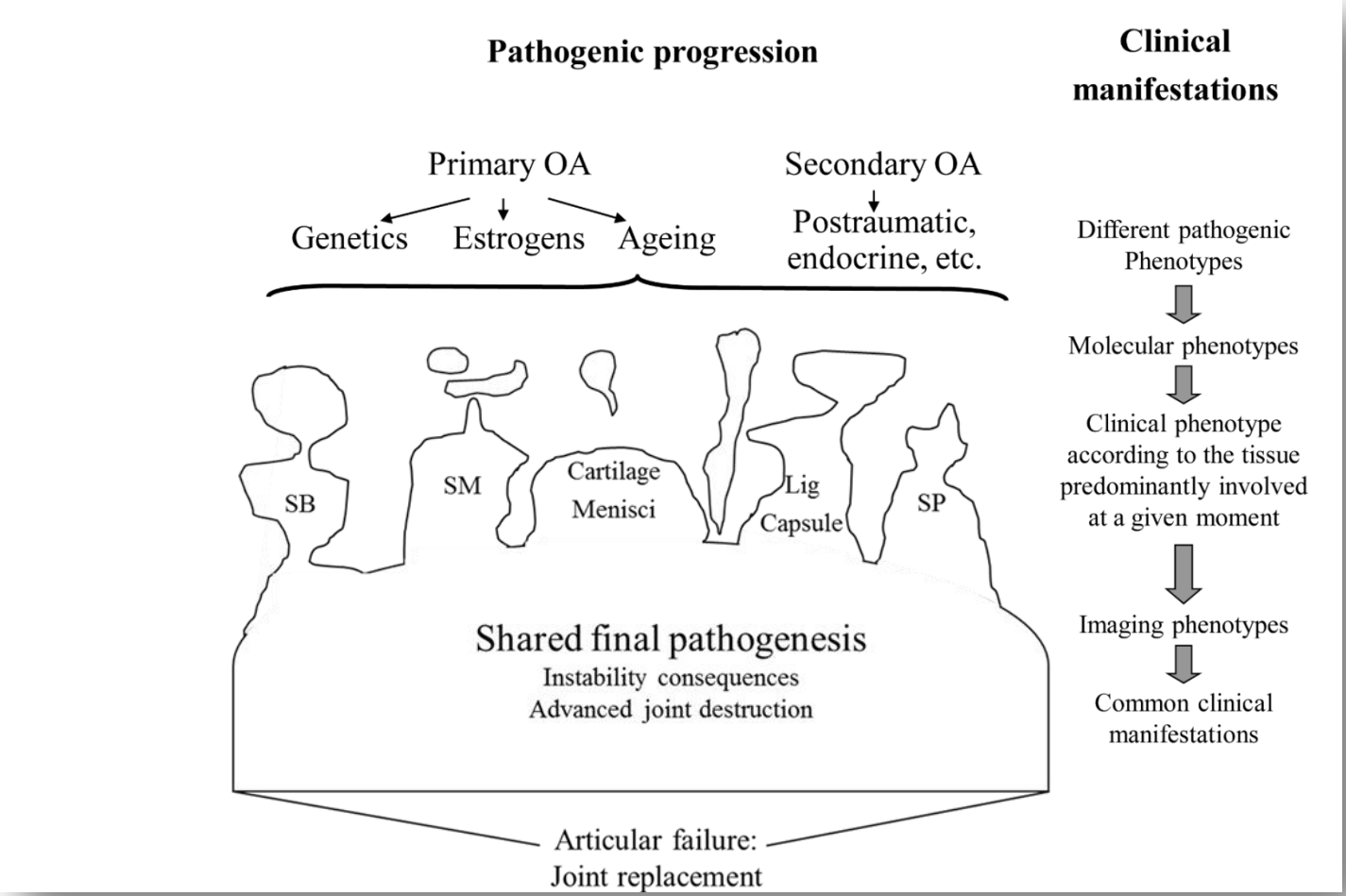
To sum up: the precise source of the river is currently disputed, nobody knows the place where the river originates, however there is an absolute consensus confirming that the river flows into the Atlantic shore between Portugal and Spain

OA: A progressive disease of changing phenotypes



Roman-Blas J et al. Arthritis Research Therapy. 2009; 11:241
Herrero-Beaumont G et al. Semin Arthritis Rheum. 2009; 39: 71

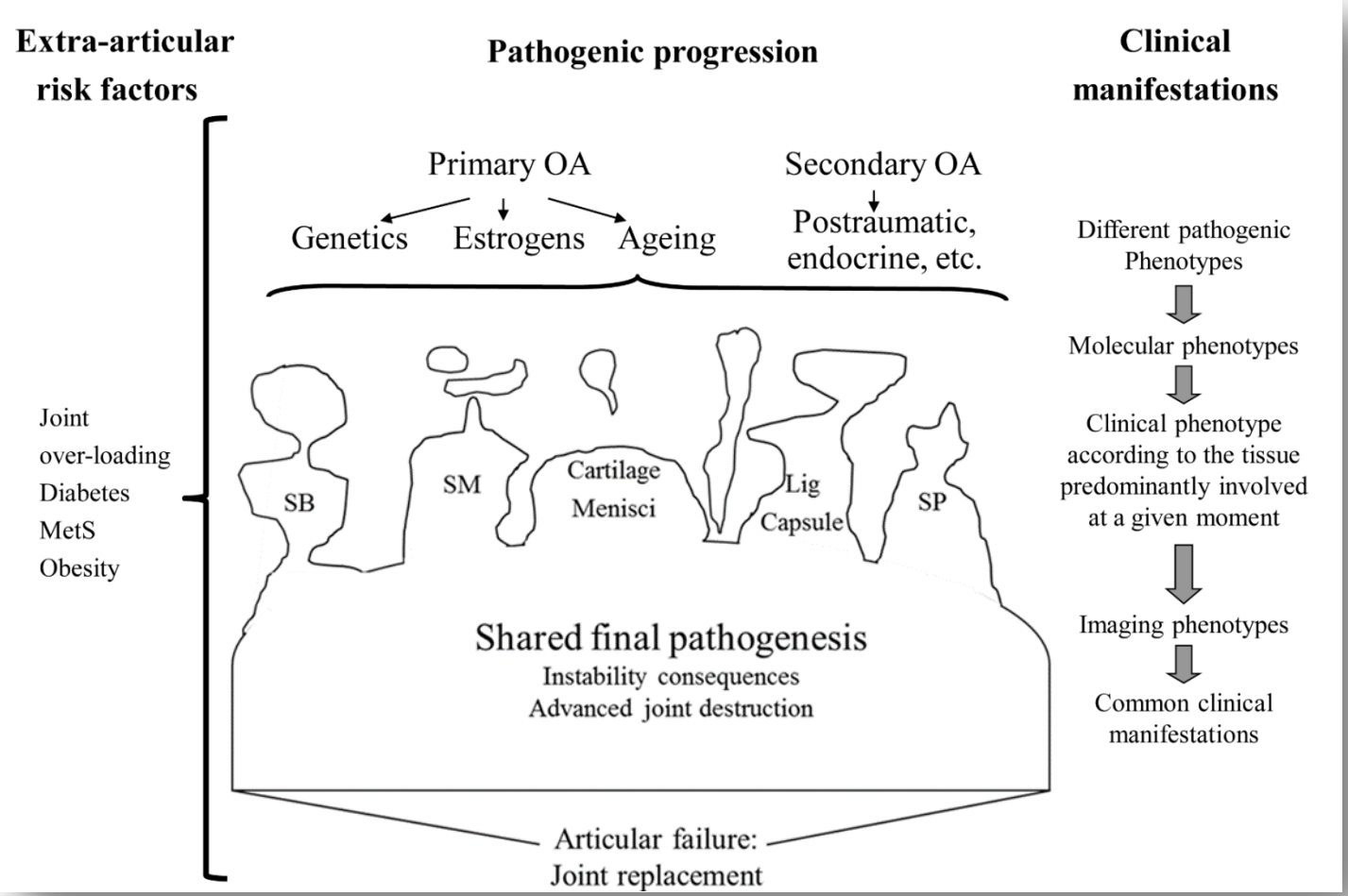
OA: A progressive disease of changing phenotypes



SB: Subchondral bone
SM: Synovium
Lig: Ligaments
SP: Sarcopenia
MetS: Metabolic syndrome

Castañeda S et al. Rheumatology (Oxford). 2013 Jul 22

OA: A progressive disease of changing phenotypes



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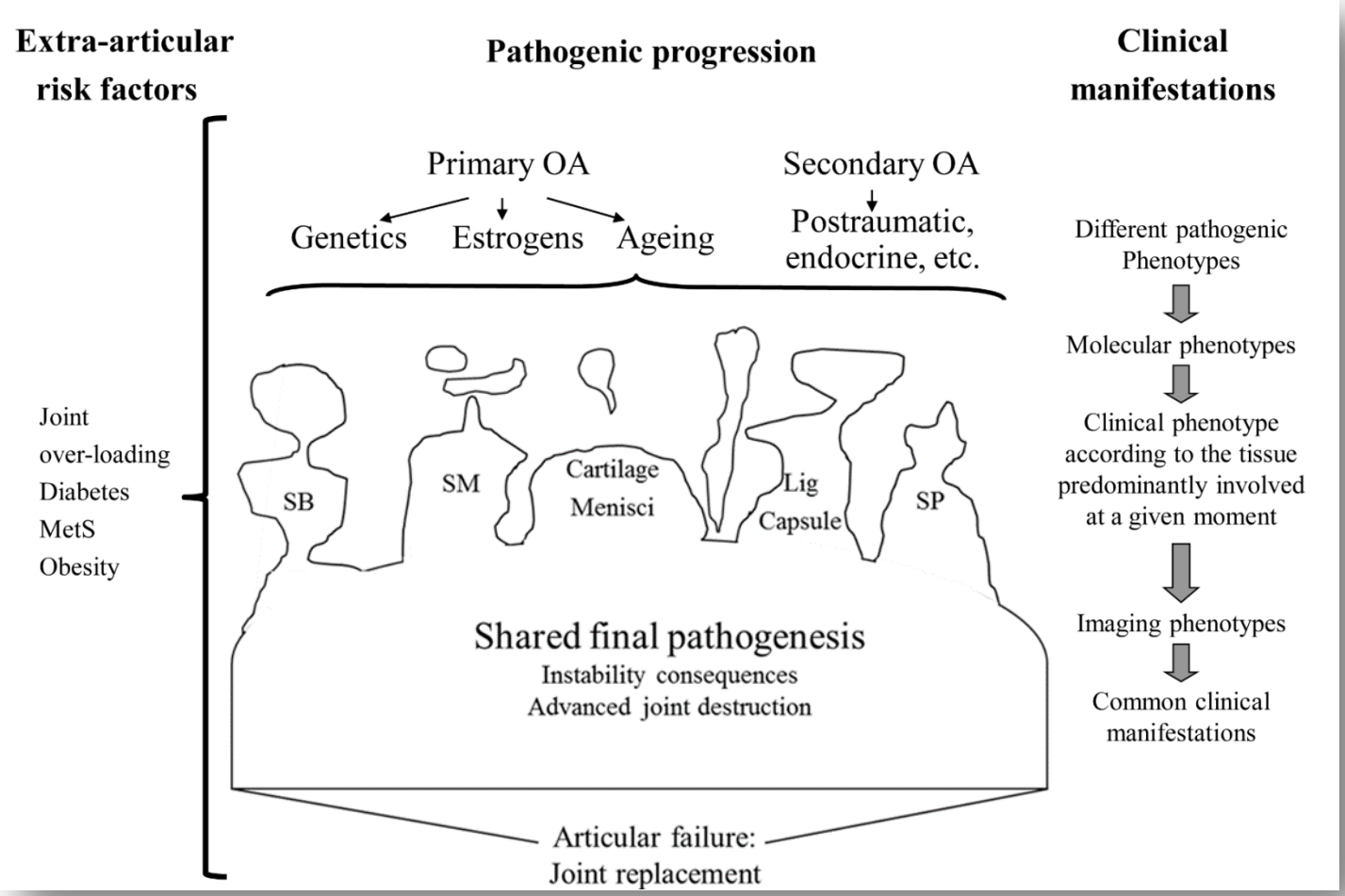
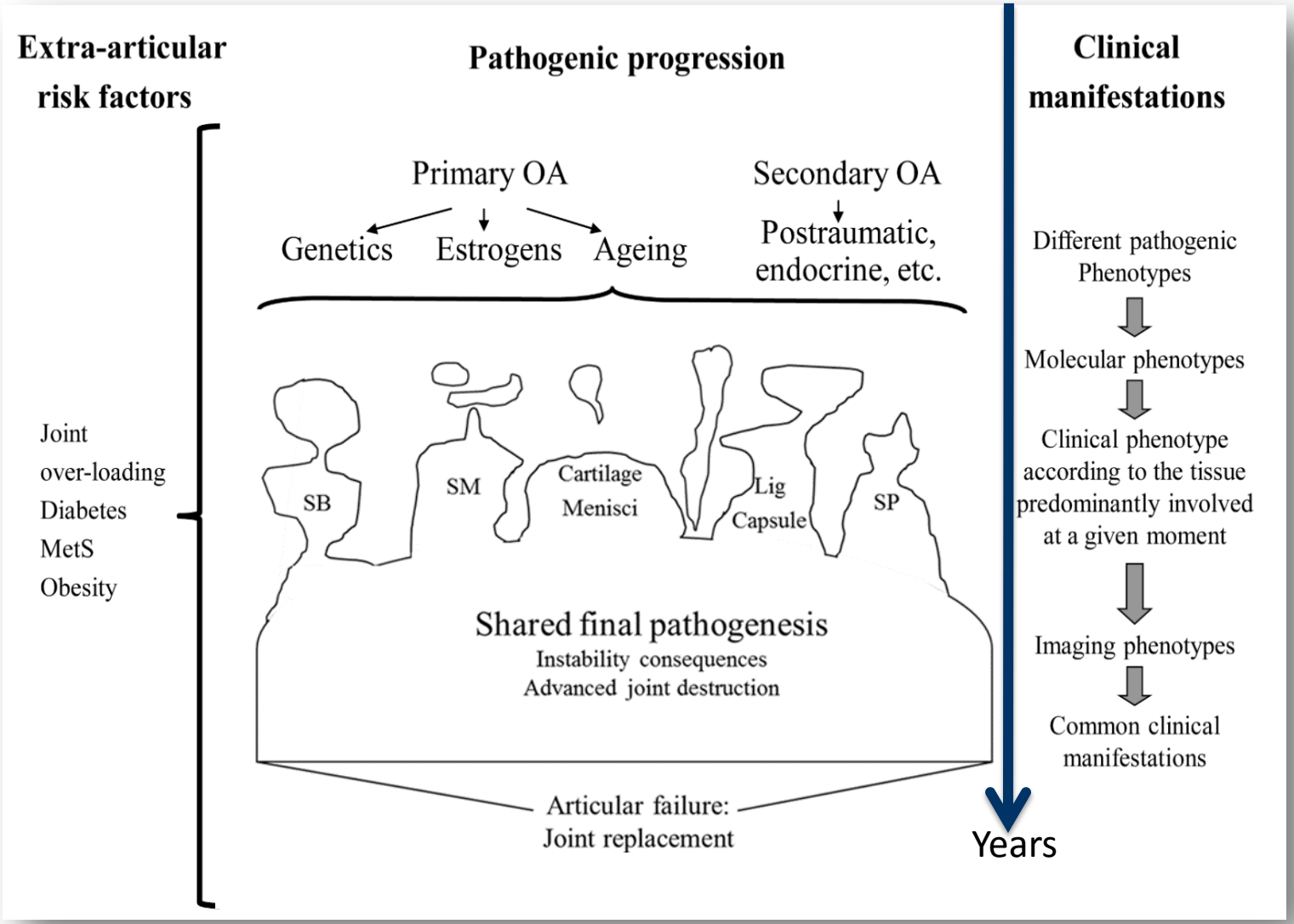
OA: A progressive disease of changing phenotypes



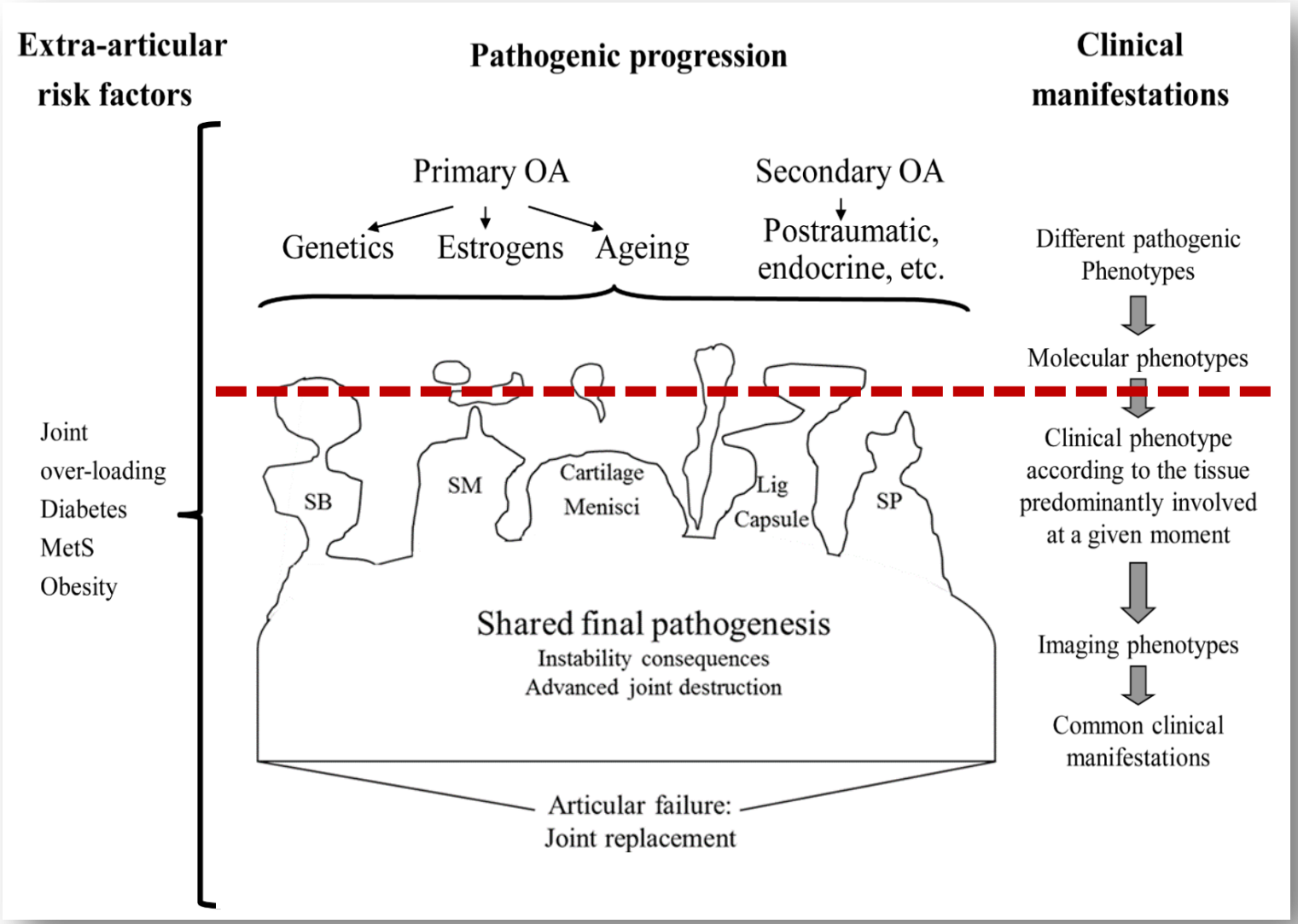
An integrated view of OA progression combining aetiopathogenic, clinical and radiographic phenotypes

Castañeda S et al. Rheumatology (Oxford). 2013 Jul 22

OA and Guadiana: two courses with changing phenotypes



Cross over perspectives



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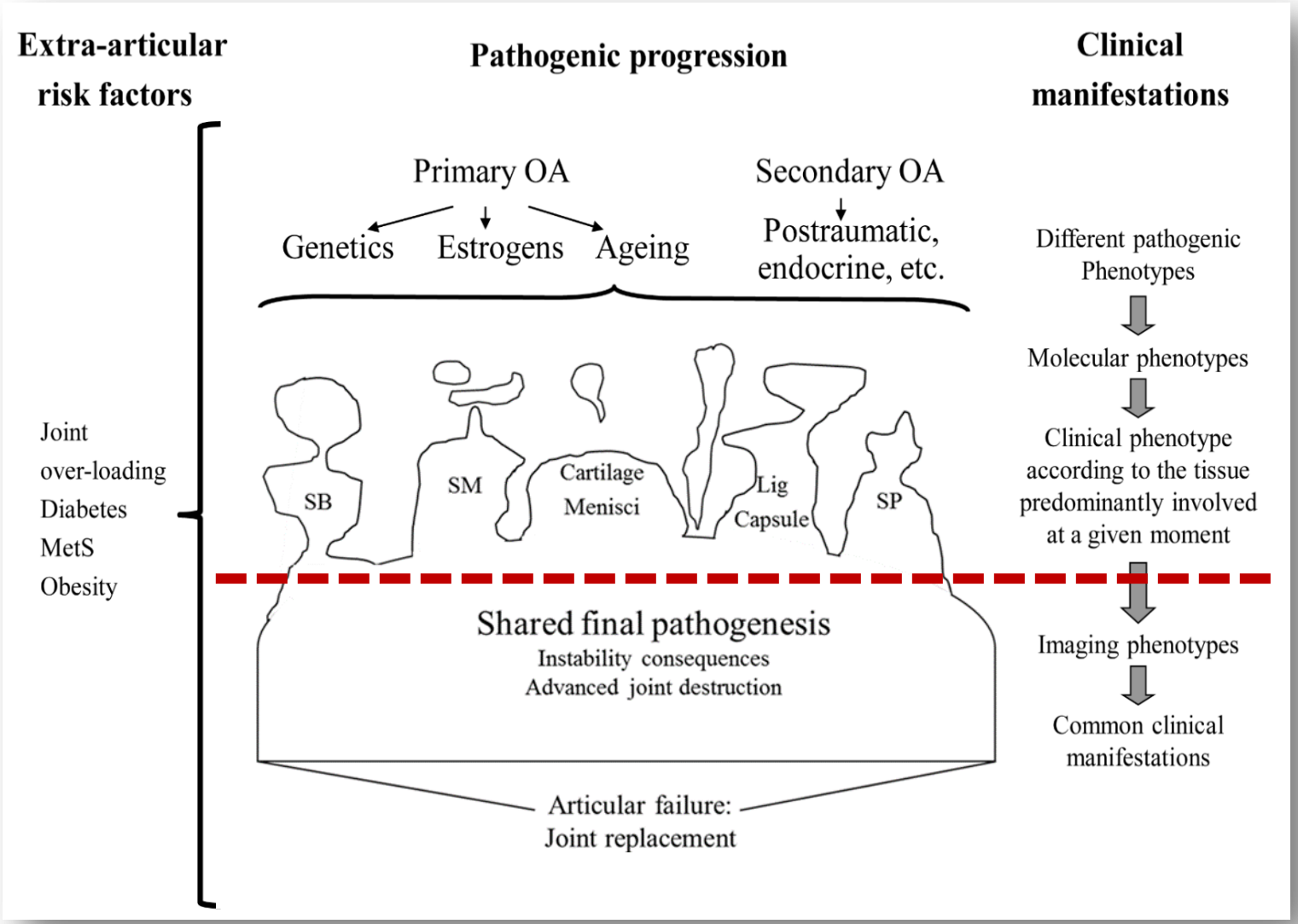

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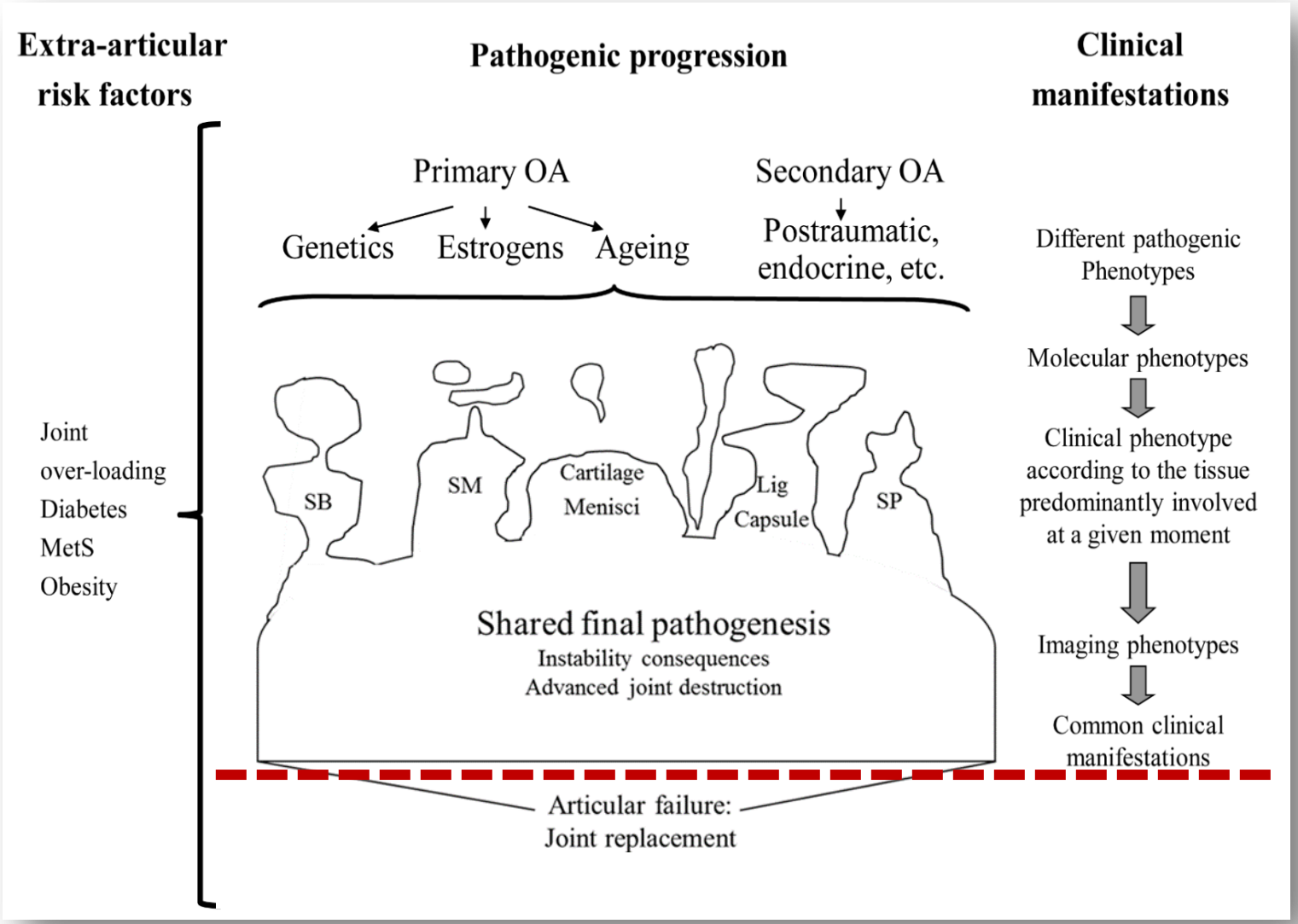
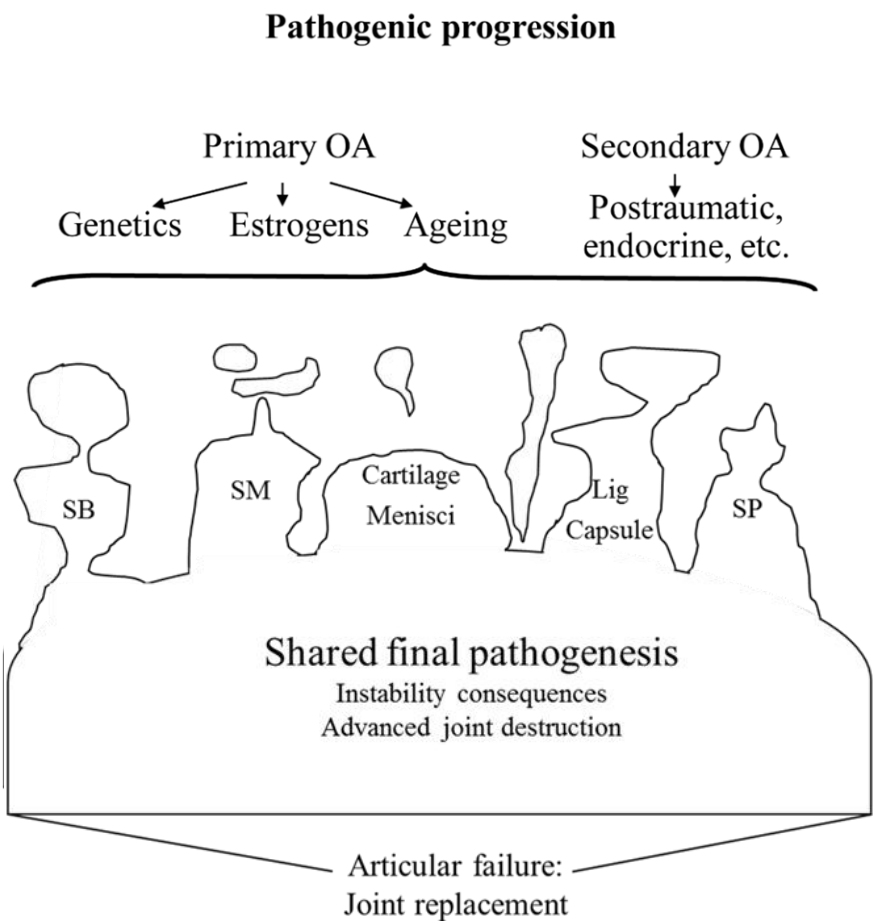


OA pain



Pain and mild stiffness

Related to activity, more constant over time.
"Mechanical"

Background pain interspersed with flares.
"Inflammatory"

Neuropatic

Years

SB: Subchondral bone
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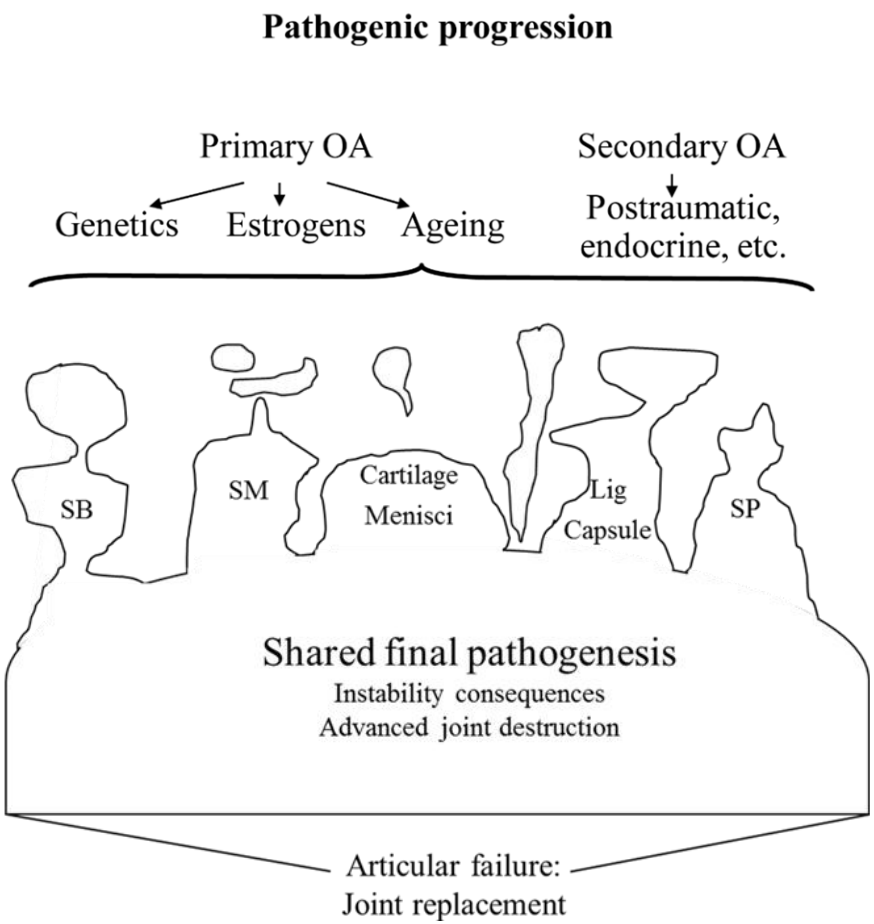
Favero M et al. RMD Open 2015;1:e000062

OA pain



Pain and mild stiffness

Silent periods

Related to activity more constant over time.
"Mechanical"

Silent periods

Background pain interspersed with flares.
"Inflammatory"

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Years

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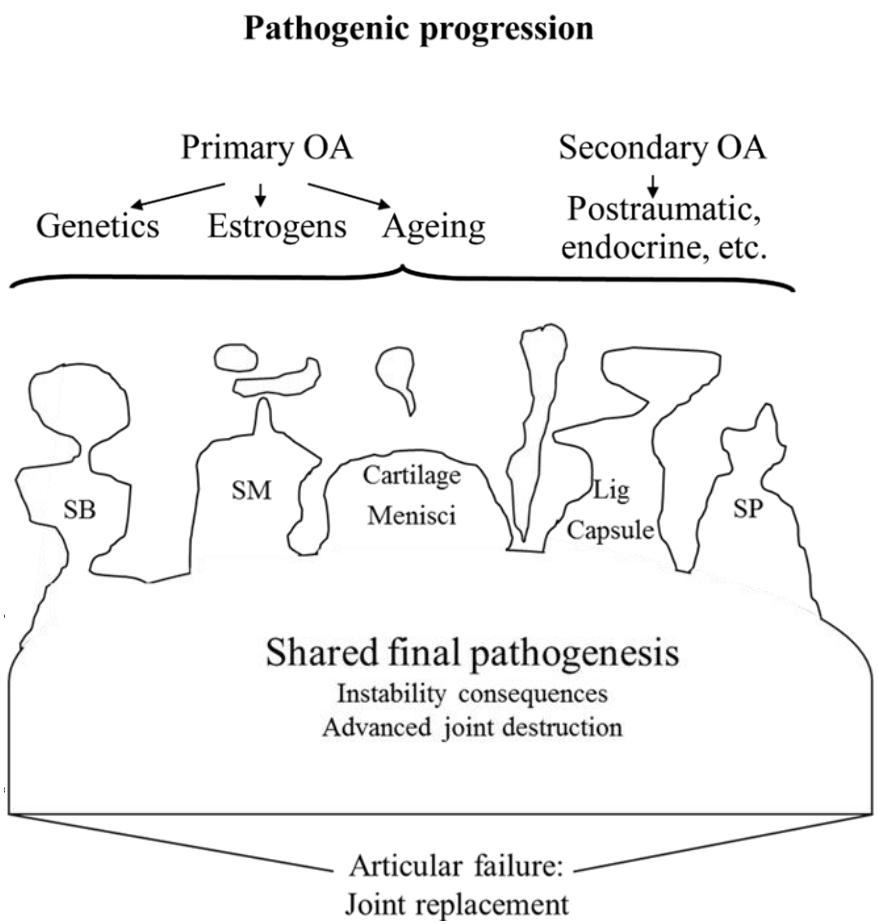
Integrating aetiopathogenic, pain and clinical endpoints



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Years

Pain and mild stiffness	Clinical endpoints
	Early Pre-imaging
Silent periods	
"Mechanical" pain	Early PreRx
	Early Rx
Silent periods	
"Inflammatory" pain	Early common OA
	Common OA
	OA studied
Neuropatic	

…and structure

Clinical endpoints

Early Pre-imaging

Early PreRx

Early Rx

Early common OA

Common OA

OA studied

Years

First Rx lesions are detected with more 10% lost cartilage

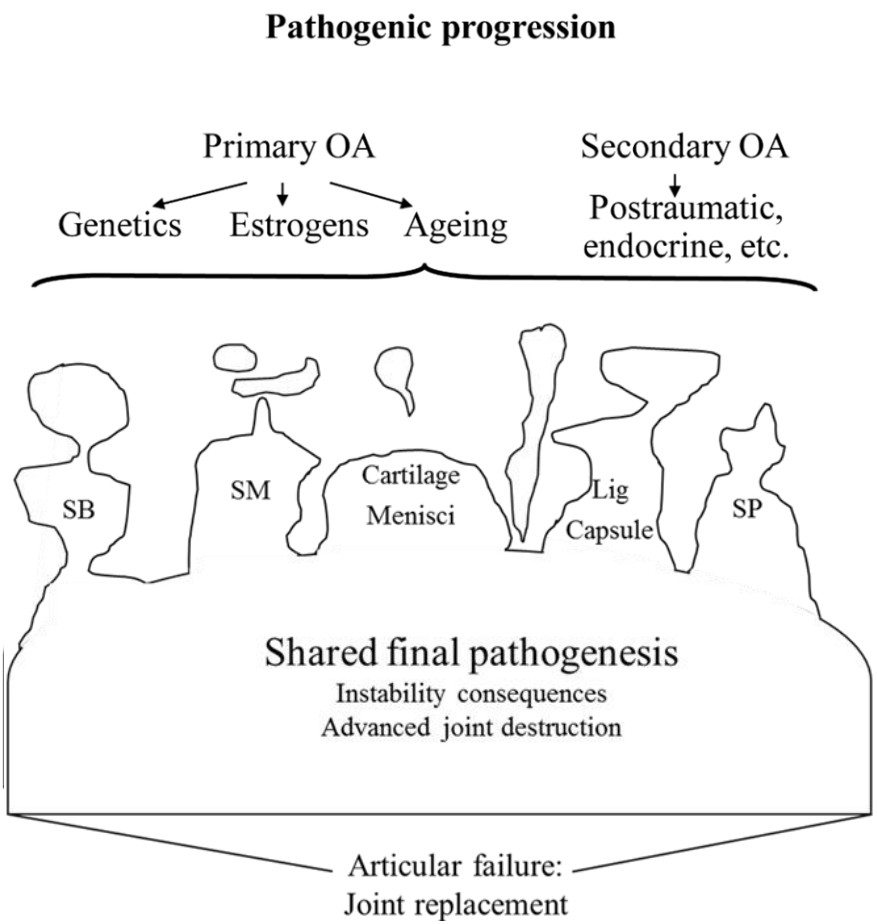
K-L grades 1 and 2 is considered early Rx OA

EOA can be asymptomatic, even when the pathological process is advanced

OA pathophysiology has been studied in samples from patients undergoing joint replacement

Favero M et al. RMD Open 2015;1:e000062

The role of MRI



Years

MRI changes are not established in early or in pre-radiological stages of KOA, and their relationship with symptoms are poorly defined

Excellent technique for qualitative diagnoses

No validated for quantitative assessment

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Histological definition: grade of 1– 3 by the OARSI scale, affecting only the superficial and middle zones of the cartilage

1 Cartilage swelling +/- mild fibrillation in the superficial zone
2 Small cartilage surface loss, cracks into the superficial zone, and some chondrocytes clusters
3 Vertical fissures into the middle zone and chondrons.

Luyten classification:

- Pain: at least two episodes for 10 days in the past year
- Structural changes: K-L grade 0 or 1 or 2 osteophytes only by plain radiographs
- Early OA changes detected by new imaging techniques and arthroscopy

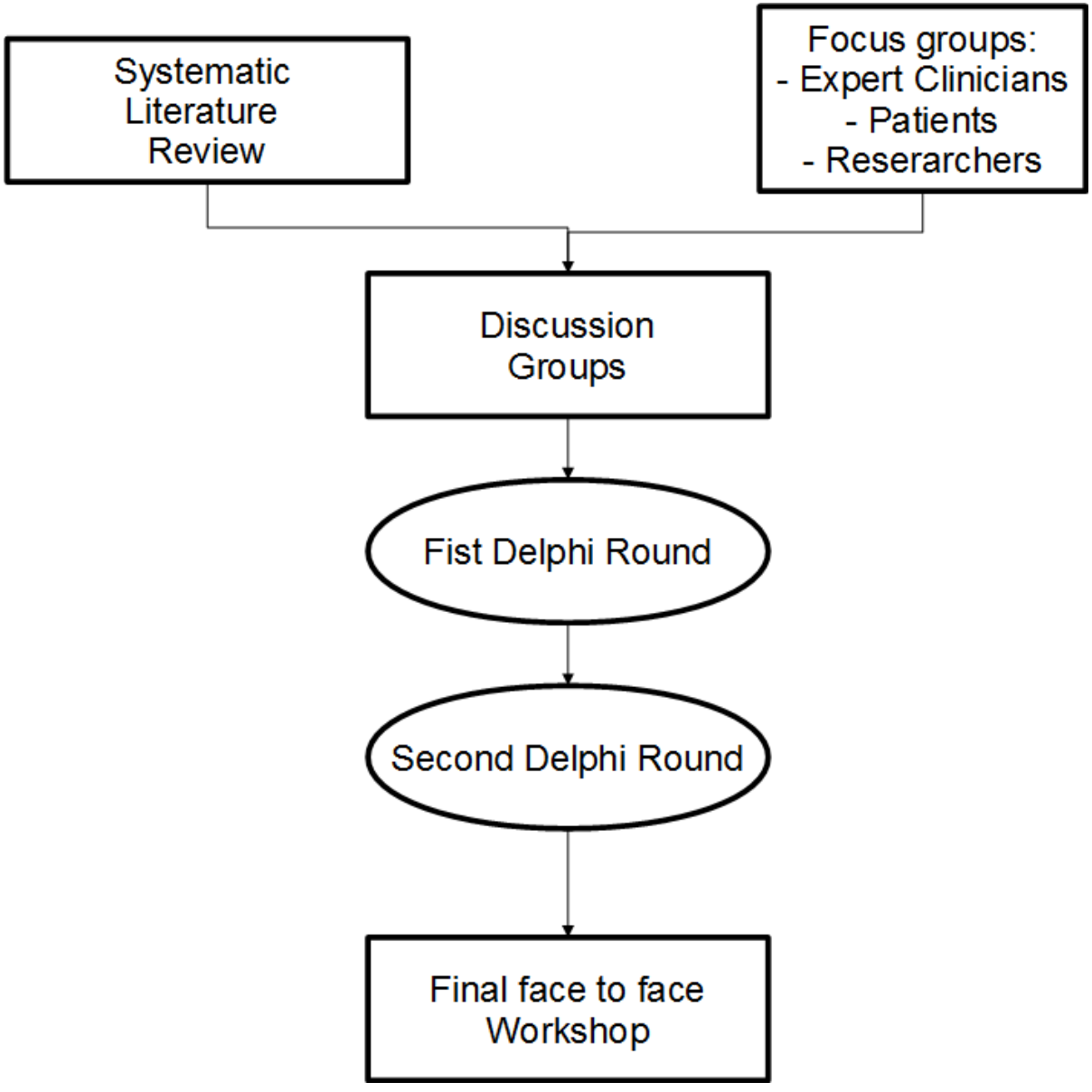
Pritzker KP et al. Osteoarthritis Cartilage 2006;14:13–29
Luyten FP et al. Knee Surg Sports Traumatol Arthrosc 2012;20:401–6

Early Symptomatic Knee Osteoarthritis (ESKOA)

- **The Italian Society of Rheumatology promoted an international consensus to define ESKOA based on available data from literature and expert opinion, as well as to identify "red flags" for referral to rheumatologists**

Migliore A et al. The challenge of the definition of ESKOA. Submitted, 2016

Flow chart of scheduled activities employed to reach a consensus on definition of ESKOA



Mandatory Symptoms

1 Any knee pain in the absence of any recent trauma or injury:

when climbing up/or down the stairs and/or

increasing with overload

less than six months of duration

2 Short joint stiffness when starting the movement

The definition of ESKOA was restricted by following applicability criteria:

Without active inflammatory arthritis or generalized pain

Kellgren Lawrence 0 degree

More than 50 years

More than 40 years only if present at least one risk factor

Risk factors

- Overweight (body mass index > 25)
- Family history of OA
- Previous knee injury
- Mal-alignment
- Lower limbs dissymmetry
- OA in other joints
- Metabolic syndrome
- Hypermobility

Red flags for referral to rheumatologists

Knee pain, in the absence of any recent trauma or injury, with or without very short joint stiffness when starting a movement, with symptoms lasting for less than 6 months

Migliore A et al. The challenge of the definition of ESKOA. Submitted, 2016

New projects addressed to investigate the early stages of KOA should be welcome because of the additional clinical information from different perspectives is needed

Early Knee Osteoarthritis

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