

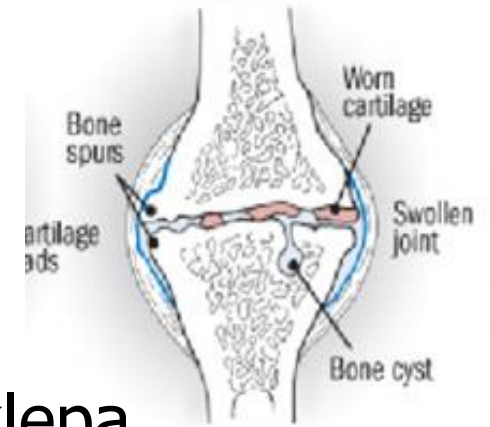
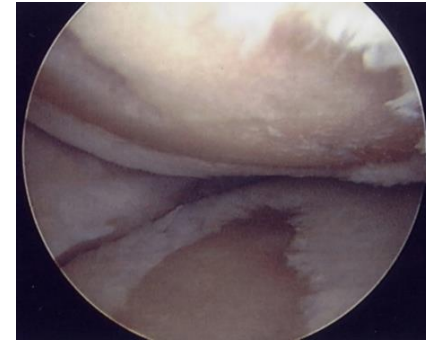
# Artroza

Prof. dr. Matej Drobnič, dr. med.

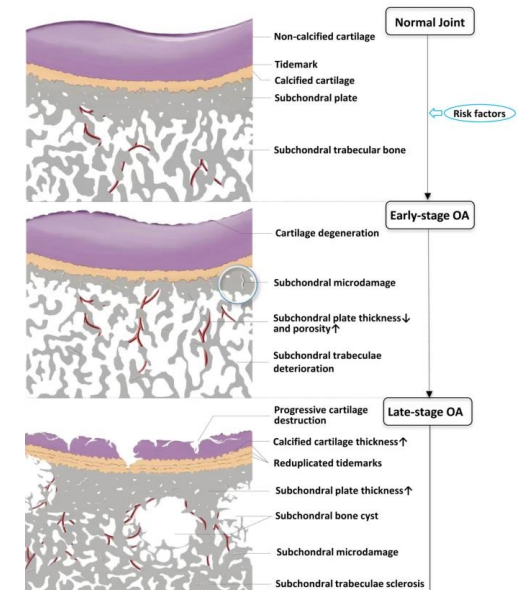
Ortopedska klinika UKC Ljubljana  
Katedra za ortopedijo MF Univerza v Ljubljani

# Kaj je artroza?

- (osteo)artroza (OA)
- kronična ne-vnetna degenerativna bolezen celotnega sklepa
- razpoke hrustanca, cefranje meniskov, ohlapnost vezi
- subhondralna skleroza, ciste, osteofiti
- sinovitis, zadebelitve sklepne ovojnice
- vnetje ob sklepnih tkiv (maščobe)
- definicija:
  - patološka vs. radiološka vs. klinična
- možni akutni zagoni (angl. flare)
  - sinovitis, artritis pri OA



© 2006 Harriet Greenfield

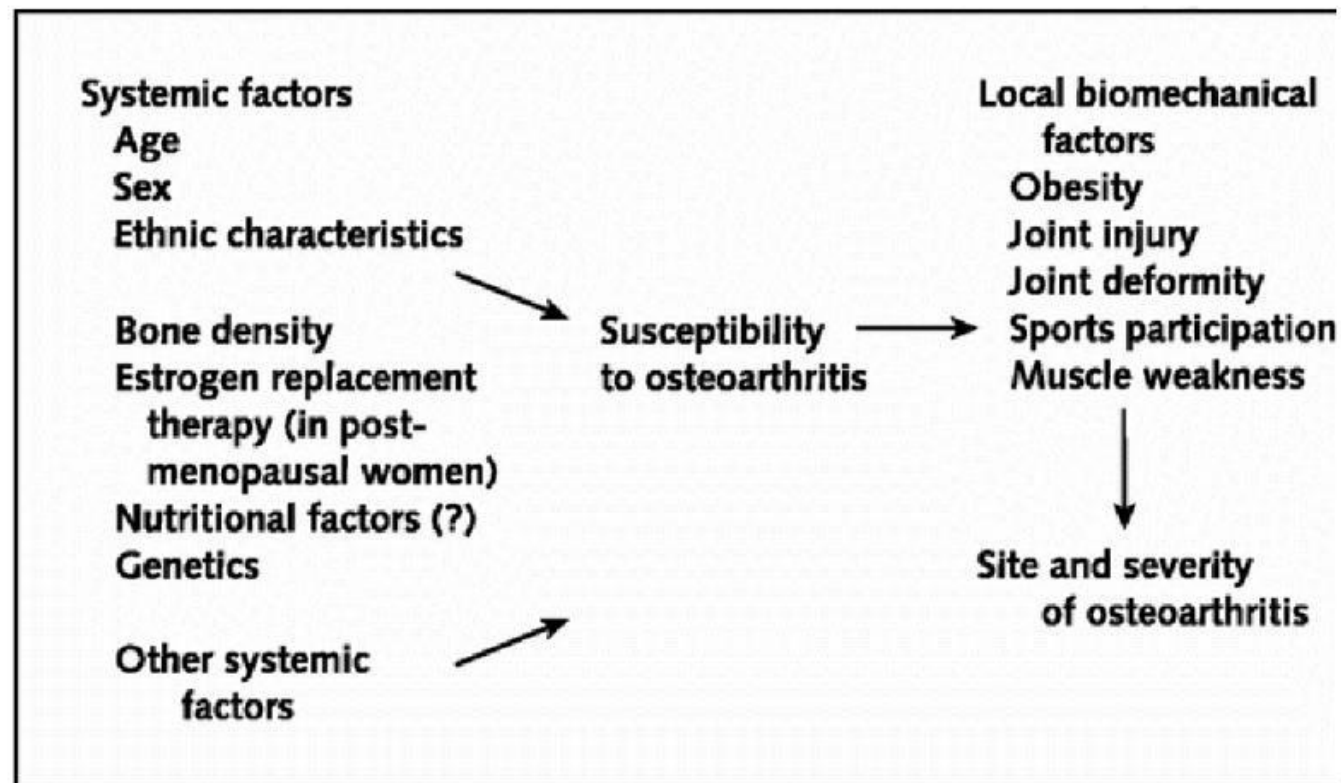


# Tipične RTG spremembe



# Vzroki za nastanek

- primarna artroza
- sekundarna artroza
  - post-travmatska
  - osteochondritis dissecans
  - revmatske bolezni
  - motnje strjevanja krvi
  - kristalopatije
  - ohronoza
  - .....



# Incidenca

- Radiološka

- Koleno

- 19-29% >45 let
    - 37% >65 let

- Kolk

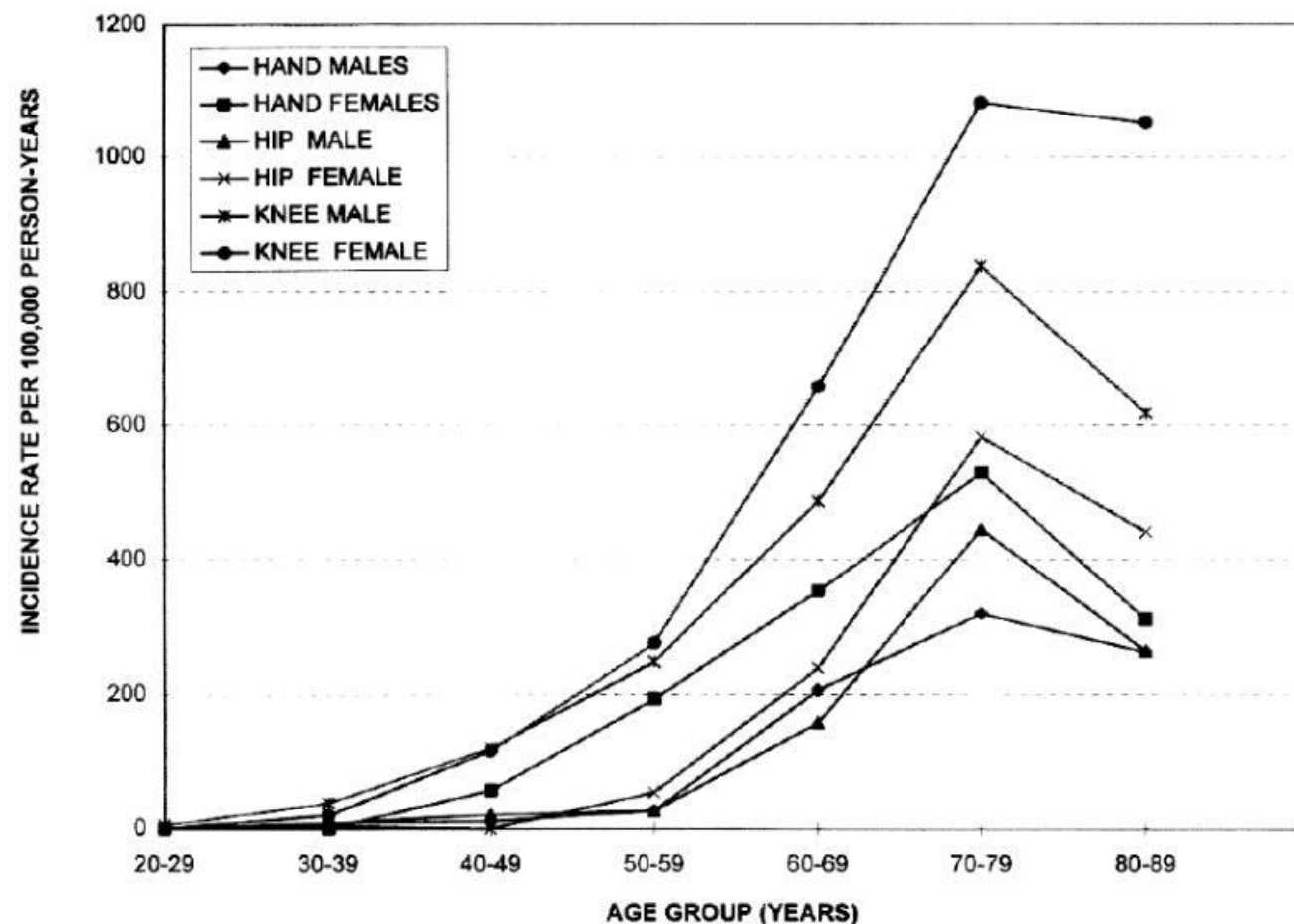
- 7% >65 let

- Roka

- 27% > 65 let

- Simptomatska

- roka 7%, koleno 5% >26 let
  - koleno 17% > 45
  - kolk 9% > 45 let



# Klinična slika

- BOLEČINA
- okorelost, rigidnost, otrdelost (stiffness)
- omejena gibljivost
- oteklina
- osteofitoza
- nestabilnost
- mehanične motnje v sklepu (preskoki, zaskoki, krepitacije)
- mišična atrofija



# Radiološki kriteriji

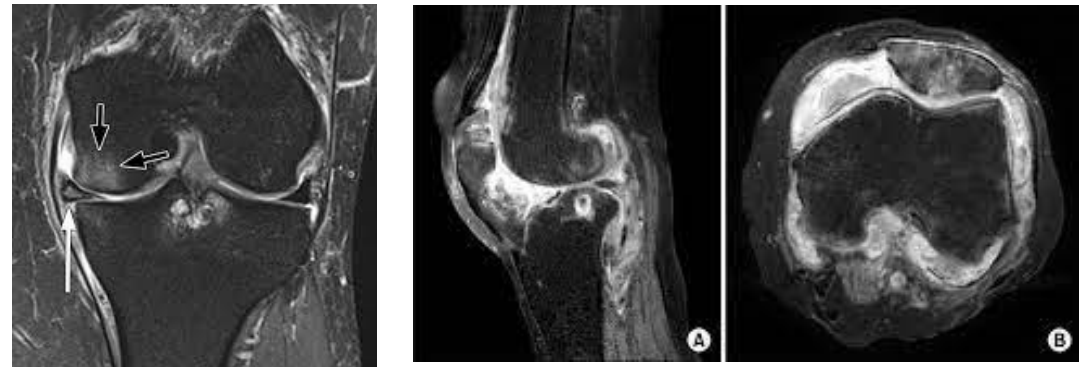
- Kellgren-Lawrence

Grade	Radiologic Findings
0	No radiological findings of osteoarthritis
I	Doubtful narrowing of joint space and possible osteophytic lipping
II	Definite osteophytes and possible narrowing of joint space
III	Moderate multiple osteophytes, definite narrowing of joint space, small pseudocystic areas with sclerotic walls and possible deformity of bone contour
IV	Large osteophytes, marked narrowing of joint space, severe sclerosis and definite deformity of bone contour



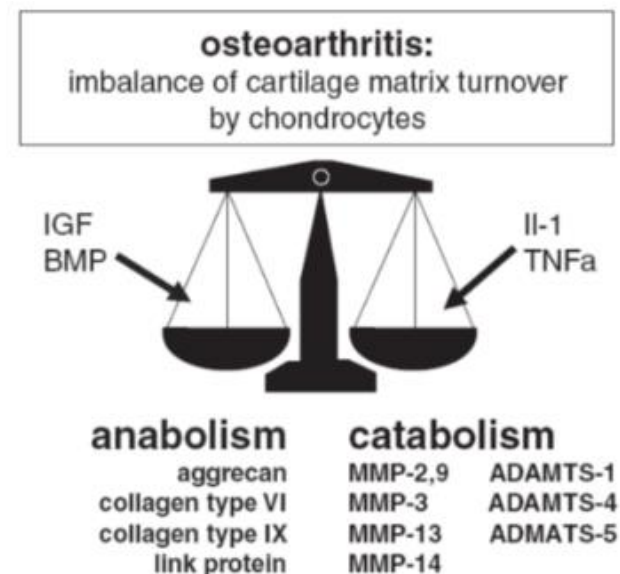
- MRI

- synovitis
- bone-marrow lesions (BML)



# Principi zdravljenja

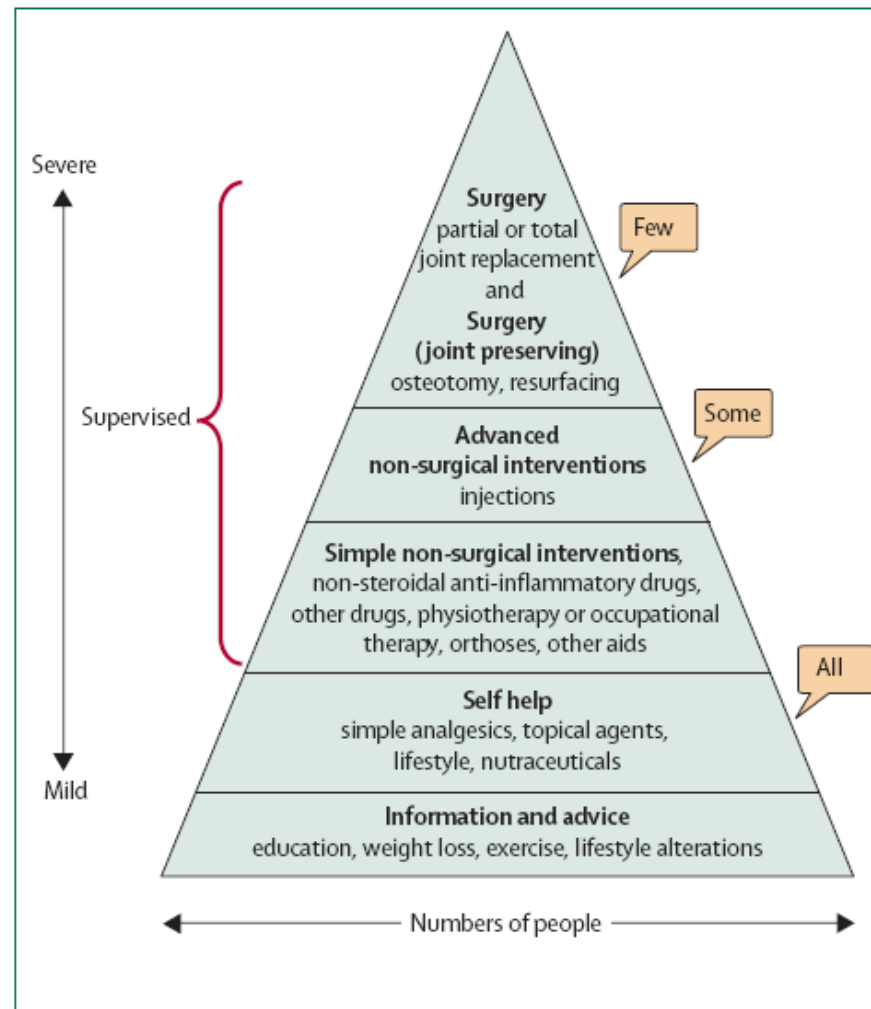
- zdravil z dokazanim vplivom na strukturo sklepa NI
- simptomatski ukrepi
- zmanjševanje bolečine in otrdelosti sklepov
- ohranjanje in izboljševanje sklepne gibljivosti
- izboljšanje funkcioniranja
- izboljševanje kakovosti življenja
- zmanjševanje nadaljnjih okvar sklepa
- izobraževanje bolnikov o bolezni in načinih zdravljenja
  
- optimalno zdravljenje OA - stopenjsko



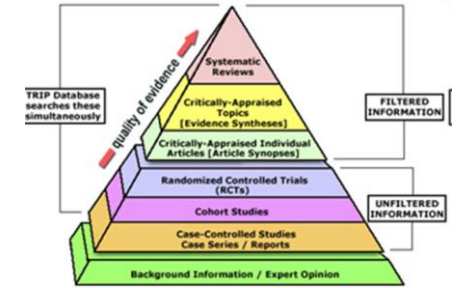


# Vrste zdravljenja

- spremljanje, edukacija
- samopomoč
  
- **KONZERVATIVNA TH**
  - nefarmakološko
  - farmakološko
  
- **OPERATIVNA TH**



# Z dokazi podprto zdravljenje (EBM)



## • OARSI priporočila

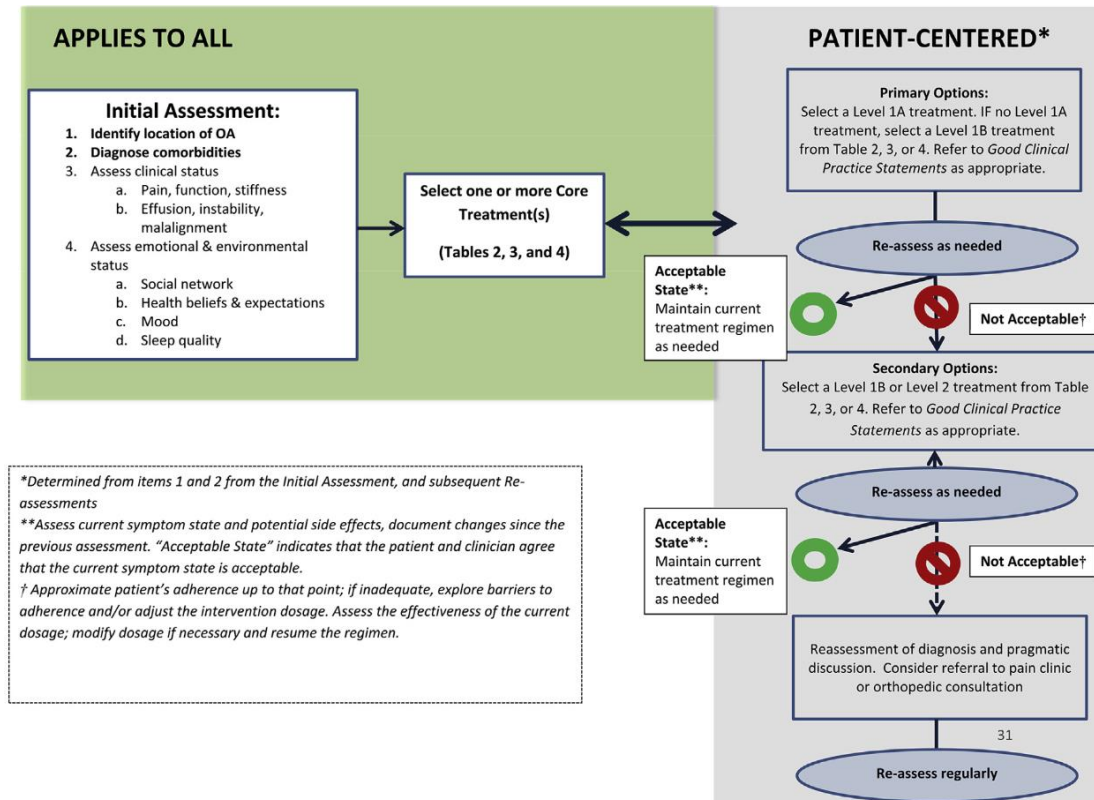
Osteoarthritis and Cartilage 27 (2019) 1578–1589

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### Osteoarthritis and Cartilage

OARSI guidelines for the non-surgical management of knee, hip, and polyarticular osteoarthritis

R.R. Bannuru †\*, M.C. Osani †, E.E. Vaysbrot †, N.K. Arden †§, K. Bennell ||, S.M.A. Bierma-Zeinstra ¶#, V.B. Kraus ††, L.S. Lohmander ††, J.H. Abbott §§, M. Bhandari ||||, F.J. Blanco ¶¶##, R. Espinosa †††††, I.K. Haugen §§§, J. Lin |||||, L.A. Mandi ¶¶¶, E. Moilanen ###, N. Nakamura ††††, L. Snyder-Mackler ††††, T. Trojjan §§§§, M. Underwood ||||| ¶¶¶¶, T.E. McAlindon †



\*Determined from items 1 and 2 from the Initial Assessment, and subsequent Re-assessments

\*\*Assess current symptom state and potential side effects, document changes since the previous assessment. "Acceptable State" indicates that the patient and clinician agree that the current symptom state is acceptable.

† Approximate patient's adherence up to that point; if inadequate, explore barriers to adherence and/or adjust the intervention dosage. Assess the effectiveness of the current dosage; modify dosage if necessary and resume the regimen.

Fig. 2. Treatment algorithm.

# OARSI priporočila 2019

Supplementary Table 5: Treatment Selections, by Level of Recommendation, for Knee Osteoarthritis

Recommendation level	Strength	Treatment Type	No Comorbidities	Gastrointestinal	Cardiovascular	Frailty	Widespread pain/Depression
<b>CORE</b>	<b>Strong</b>	Arthritis Education; Structured Exercise Programs (Type 1- strengthening and/or cardio and/or balance training/neuromuscular exercise OR Type 2- Mind-body Exercise including Tai Chi or Yoga) with or without Dietary Weight Management					
<b>Level 1A-</b> ≥75% “in favor” & >50% “strong” Recommendation	<b>Strong</b>	<i>Pharmacologic</i>	Topical NSAIDs	Topical NSAIDs		Topical NSAIDs	<i>refer to Level 1B</i>
		<i>Non-Pharmacologic</i>	<i>refer to Level 1B</i>	<i>refer to Level 1B</i>		<i>refer to Level 1B</i>	<i>refer to Level 1B</i>
<b>Level 1B-</b> ≥75% “in favor” & >50% “conditional” Recommendation	<b>Conditional</b>	<i>Pharmacologic</i>	<ul style="list-style-type: none"> <li>Non-selective NSAIDs</li> <li>Non-selective NSAID + PPI</li> <li>COX-2 Inhibitors</li> </ul> IACS	COX-2 Inhibitors IACS, IAHA	IACS, IAHA	IACS, IAHA	<ul style="list-style-type: none"> <li>Non-selective NSAIDs</li> <li>Non-selective NSAID + PPI</li> <li>COX-2 Inhibitors</li> </ul>
		<i>Non-Pharmacologic</i>	Aquatic Exercise, Gait Aids, Self-Management Programs	Aquatic Exercise, Gait Aids, Self-Management Programs		Aquatic Exercise, Gait Aids, Self-Management Programs	Aquatic Exercise, Cognitive Behavioral Therapy (with or without Exercise), Self-Management Programs, Gait Aids
<b>Level 2-</b> 60%-74% “in favor”	<b>Conditional</b>	<i>Pharmacologic</i>	IAHA	Non-selective NSAID + PPI	<i>see below</i>	<i>see below</i>	Duloxetine, IACS, IAHA, Topical NSAIDs
		<i>Non-Pharmacologic</i>	Cognitive Behavioral Therapy with Exercise	Cognitive Behavioral Therapy with Exercise		Cognitive Behavioral Therapy with Exercise	<i>refer to Level 3</i>

# OARSI priporočila 2019

Level 3- 40%-59% "in favor"	Conditional	Pharmacologic	Duloxetine	<i>see below</i>	<ul style="list-style-type: none"> <li>Non-selective NSAIDs</li> <li>Non-selective NSAID + PPI</li> <li>COX-2 Inhibitors</li> </ul>	COX-2 Inhibitors, Duloxetine	<i>see below</i>
		Non-Pharmacologic	Massage, Wedge Insoles	Laser Therapy, Massage, Wedge Insoles		Laser Therapy, Massage, Wedge Insoles	Massage, Wedge Insoles
		Nutraceutical	Avocado Soybean Unsaponifiables, Boswellia, Curcuminoid Formulations	Avocado Soybean Unsaponifiables, Boswellia, Curcuminoid Formulations		Avocado Soybean Unsaponifiables, Boswellia, Curcuminoid Formulations	Avocado Soybean Unsaponifiables, Boswellia, Curcuminoid Formulations
Level 4B- 60%-74% "against"	Conditional	Pharmacologic	Topical Capsaicin	Paracetamol	Paracetamol	Non-selective NSAIDs, NSAID+PPI	<i>see below</i>
		Non-Pharmacologic	Laser Therapy	<i>see below</i>		<del>Balneo</del> therapy	<del>Balneo</del> therapy
		Nutraceutical	<i>refer to Level 4A</i>	<del>Methylsulfonylmethane</del>		Chondroitin, <del>Methylsulfonylmethane</del>	Chondroitin, <del>Methylsulfonylmethane</del> , Vitamin D
Level 4A- ≥75% "against" & >50% "conditional" Recommendation	Conditional	Pharmacologic	Oral Opioids, Paracetamol	Duloxetine, Topical Capsaicin	Duloxetine, Topical Capsaicin	Paracetamol, Topical Capsaicin	Paracetamol, Topical Capsaicin
		Non-Pharmacologic	<del>Balneo</del> therapy, Conventional Acupuncture, <del>Electroacupuncture</del> , Electromagnetic Therapies, Mobilization & Manipulation,	<del>Balneo</del> therapy, Conventional Acupuncture, Electromagnetic Therapies, Mobilization & Manipulation, Nerve Block Therapy, Soft brace, Therapeutic Ultrasound, Thermotherapy (hot), Varus/Valgus Unloading/Re-aligning Brace		Conventional Acupuncture, Electromagnetic Therapies, Mobilization & Manipulation, Nerve Block	Conventional Acupuncture, <del>Electroacupuncture</del> , Electromagnetic Therapies, Laser Therapy, Mobilization & Manipulation, Nerve Block
			Nerve Block Therapy, Soft brace, Therapeutic Ultrasound, Thermotherapy (hot), Varus/Valgus Unloading/Realigning Brace			Therapy, Soft brace, , Therapeutic Ultrasound, Thermotherapy (hot or cold)	Therapy, Therapeutic Ultrasound, Thermotherapy (cold)
		Nutraceutical	Chondroitin, Collagen, <del>Diacerein</del> , Glucosamine + Chondroitin, <del>Methylsulfonylmethane</del> , Vitamin D	Chondroitin, Collagen, <del>Diacerein</del> , Vitamin D		<del>Diacerein</del> , Vitamin D	Collagen, <del>Diacerein</del>

# Edukacija, režim življenja, spremljanje








- Vsi bolniki z OA kolena morajo biti **seznanjeni** s pomenom spremembe življenjskega stila, vadbe, časovnih aktivnosti, redukcije telesne teže in drugih ukrepov za razbremenitev prizadetih sklepov. Začetna oskrba naj temelji na samopomoči in **bolnikovih lastnih ukrepih**, ne pa na pomoči profesionalnega zdravstvenega osebja. V nadaljnjem poteku je pomembno **redno izvajanje** nefarmakoloških ukrepov. (LoE Ia; ES – 0,06)
- Klinično stanje bolnikov se lahko izboljša z rednim **kontaktom po telefonu**. (LoE Ia; ES – 0,12)
- Bolnike z OA kolena, ki imajo povečano telesno težo, naj se vzpodbuja k **redukciji teže** in ohranitvi na nižjem nivoju. (LoE Ia; ES – 0,20)

# Vaje, fizioterapija

- gretje/hlajenje, protibolečinska, manualna
- asistirane vaje
- aktivne vaje proti upor
- gladki ponavljajoči se gibi v smeri
- raztezne vaje proti zakrčenosti
- splošne aerobne vaje
- hidrogimnastika
- joga, Tai-Chi



**What Exercise or Physical Activity Is Recommended in the Management of Knee OA?**

<b>Tai Chi</b> SR - Lauche et al., 2013 SR - Kong et al., 2016 CPG - Brosseau et al., 2017	<b>Yoga</b> SR - Kan et al., 2016 CPG - Brosseau et al., 2017	<b>Cycling</b> RCT - Sabacinski et al., 2016 RCT - Lund et al., 2017 CPG - Brosseau et al., 2017	<b>Walking</b> CPG - Loow et al., 2012 CPG - Fernandes et al., 2013 CPG - Brosseau et al., 2017
			
<b>Aquatic Exercise</b> SR - Bartels et al., 2016 CPG - Fernandes et al., 2013 CPG - McAlindon et al., 2014	<b>Strength Training</b> SR - Jansen et al., 2011 SR - Fransen et al., 2015 CPG - McAlindon et al., 2014	<b>Neuromuscular Training</b> Ageberg et al., 2013 RCT - Bennel et al., 2014 RCT - Villadsen et al., 2014 Skou et al., 2017	
			

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# Medicinsko tehnični pripomočki

- vložki za čevlje, po meri izdelan čevelj
- ortoze
  - elastične, grelne
  - razbremenitvene (unloader)
  - stabilizacijske
- palica, bergle, hodulja, voziček



# Farma – zunanja uporaba

- Mazila
  - rubefaciensi
  - NSAR
  - capsaicin
  - „naravna“
- Obliži
  - NSAR

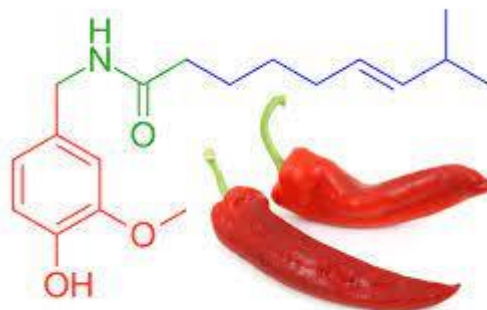
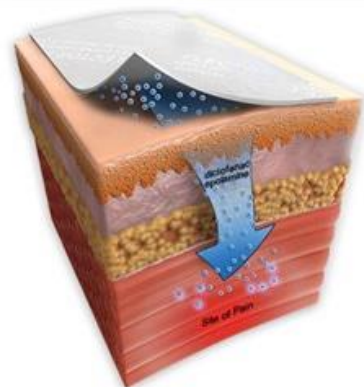


Table 2. Select Prescription and Over-the-Counter Topical and Transdermal Agents

Active Ingredient	Examples
Capsaicin	Qutenza 8% topical patch Various products 0.025%, 0.075%, or 0.1% topical cream Castiva Warming 0.035% lotion Various brands 0.15% topical solution
Diclofenac	Flector 1.3% topical patch Voltaren 1% topical gel Solaraze 3% topical gel
Ibuprofen	EnovaRX-ibuprofen 10% in microderm external cream compounding kit
Ketoprofen	Active-Ketoprofen 5% kit for compounding
Lidocaine	Various brands 3%, 4%, or 5% topical cream Solarcaine 0.5% topical cream Various brands 0.5% topical spray Various brands 5% topical ointment Various brands 5% transdermal patch Various brands 3% topical lotion Various brands 4% topical solution EnovaRX-Lidocaine 5% or 10% in microderm external cream compounding kit
Nitroglycerin	Various brands 0.1 mg/hr, 0.2 mg/h, 0.3 mg/h, 0.4 mg/h, 0.6 mg/h, or 0.8 mg/h transdermal patch Nitro-Bid 2% ointment
Trolamine Salicylate	Various brands 10% topical cream Aspercreme 10% topical lotion
Combination Products	
Capsaicin/Menthol	Capzasin 0.025%/10% quick-relief topical gel Various brands 0.0225%/4.5%, 0.025%/5%, or 0.0375%/5% topical patch Zostrix 0.025%/2% topical cream
Camphor/Menthol/Methyl Salicylate	Various brands 0.5%/0.3%/1% or 1.2%/5.7%/6.3% topical patch Various brands 4%/10%/30% topical cream Flexall Plus Maximum Strength 3.1%/16%/10% topical gel
Ketoprofen/Lidocaine	Vopac 10%/2% topical cream compounding kit
Lidocaine/Tetracaine	Synera 70 mg/70 mg topical patch Pitaglis 7%/7% topical cream
Menthol/Methyl Salicylate	Salonpas 3%/10% topical patch Various brands 1%/15%, 8%/30%, 10%/15%, 10%/30%, or 4%/25% topical cream Various brands 3%/15%, 5%/14%, or 10.5%/8.5% topical lotion Various brands 6%/14% or 7.6%/29% topical ointment



# Farma - peroralno

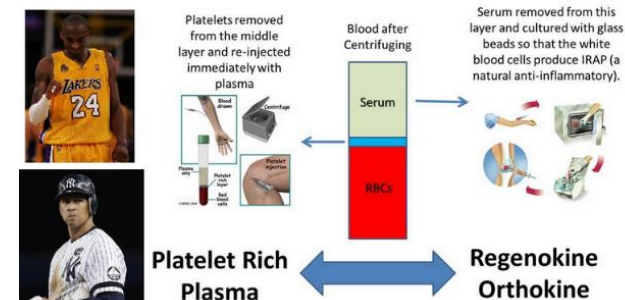
- paracetamol vs. NSAR vs. COX2
  - "kronična" ali "akutna" artroza
  - analgezija ali protivnetno
  - kronična oblika paracetamol 1<sup>st</sup>
  - NSAR tudi v lokalni obliki mazil/obližev
- prehranski dodatki (nutraceuticals)
  - neskončen seznam snovi, kombinacij, doz
  - "naravni" izvor
  - glukozamin/hondroitin, kolagen, avokado/soja..
  - nekatera so podprta z dokazi
    - protivnetno
    - antioksidanti
    - anabolni, antikatabolni?
    - strukturni učinek?

Table 1. Potential role of nutraceuticals in osteoarthritis. Potential role: none "-"; low "+"; moderate "++"; high "+++".

Analyzed Articles	Nutraceuticals	Potential Role				
		Antiinflammatory	Redox Balance/Antioxidant	Anabolic	Anticatabolic	Structural Substrates
Boe and Vangness; <i>Am. J. Orthop.</i> 2015, 44, 302–305. Hill et al.; <i>Ann. Rheum. Dis.</i> 2016, 75, 23–29. Gao et al.; <i>Ann. Rheum. Dis.</i> 2016, 75, e13. Lopez; <i>PM R</i> 2012, 4, S155–S168.	Fish Oil EPA + DHA (2–4 g/day)	+++	–	–	+++	++
Kirkham and Samarasinghe; <i>J. Orthop. Surg.</i> 2009, 17, 72–76. Michel et al.; <i>Arthritis Rheum.</i> 2005, 52, 779–786. Kahan et al.; <i>Arthritis Rheum.</i> 2009, 60, 524–533. Jackson et al.; <i>Osteoarthritis Cartil.</i> 2010, 19, 297–302. Lopez; <i>PM R</i> 2012, 4, S155–S168. Cruentwald et al.; <i>Adv. Ther.</i> 2009, 26, 858–871. Maneiro et al.; <i>Clin. Exp. Rheumatol.</i> 2004, 22, 307–312. Adams et al.; <i>Drug Saf.</i> 2000, 23, 115–130. Balogh et al.; <i>J. Agric. Food Chem.</i> 2008, 56, 10582–10593.	GAGs glucosamine sulfate (20 mg/kg body weight/day); chondroitin sulfate (1200 mg/d); hyaluronic acid (50–100 mg/d)	+	+	++	+++	+++
Musumeci et al.; <i>J. Nutr. Biochem.</i> 2013, 24, 2064–2075. Lopez; <i>PM R</i> 2012, 4, S155–S168. Bohlooli et al.; <i>J. Clin. Rheumatol.</i> 2012, 18, 99–101.	Olive oil phenolic compounds, MUFAs (500–2000 mg/d)	+++	++	+	–	+
Lieber and Packer; <i>Am. J. Clin. Nutr.</i> 2002, 76, 1148S–1150S. Hosea Blewett; <i>Crit. Rev. Food Sci. Nutr.</i> 2008, 48, 458–463. Kon et al.; <i>Knee Surg. Sports Traumatol. Arthrosc.</i> 2012, 20, 436–449. Lopez; <i>PM R</i> 2012, 4, S155–S168.	Methionine (800–1200 mg/d)	–	+++	+	+	++
Lugo et al.; <i>Nutr. J.</i> 2016, 15, 14. Gupta et al.; <i>J. Anim. Physiol. Anim. Nutr.</i> 2012, 96, 770–777. Zhu et al.; <i>Clin. Immunol.</i> 2007, 122, 7584. Park et al.; <i>Mod. Rheumatol.</i> 2009, 19, 581–589. Lopez; <i>PM R</i> 2012, 4, S155–S168.	Undenatured type II collagen (40 mg/d)	+	–	+	+++	+++

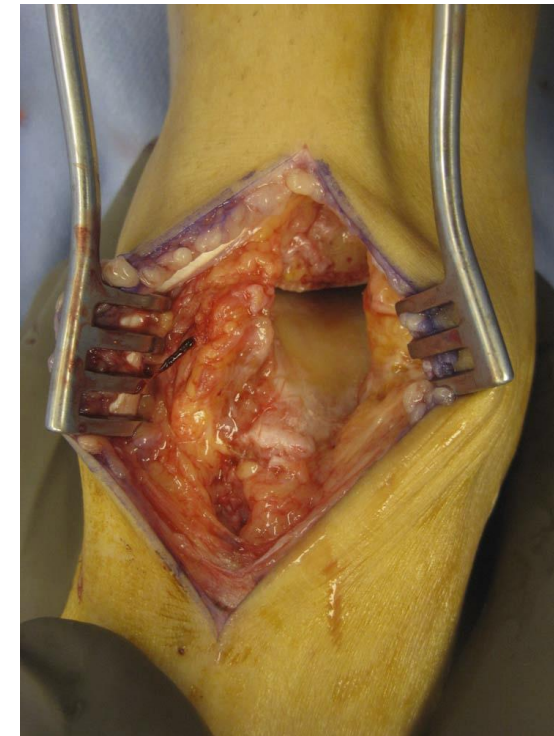
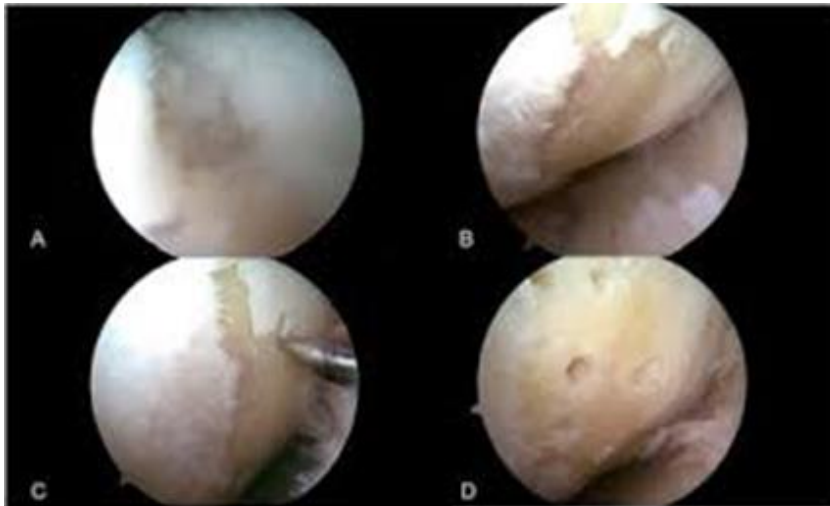
# Farma – Injekcijske metode

- injekcijske terapije
  - veliki/mali sklepi, intra-artikularno, splošne kontraindikacije
- steroid +/- LA
  - odličen protivneten učinek, za akutno fazo
  - atrofija tkiv (katabolni učinek), hondrotoksičnost LA?
- hialuronati
  - viskosuplementacija kronična, artroza, 9-12 M,
  - rekombinantni, med pripomočki, single-/multiple-shots
- obogatena trombocitna plazma (PRP, ACP)
  - derivati krvi, centrifugiranje, uporabimo "buffy coat"
  - viskosuplementacija + protivnetno, 12-18 M
- mezenhimske matične/stromalne celice (MSC)
  - celična terapija, aspirat kostnega mozga ali lipo-aspirat
  - minimalna manipulacija vs. gojenje, avtologno vs. alogena
  - imunomodulatorno močno, strukturno minimalno, 2-3 leta



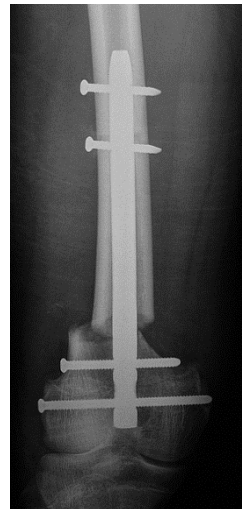
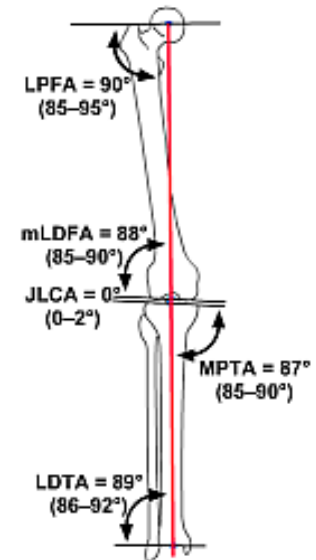
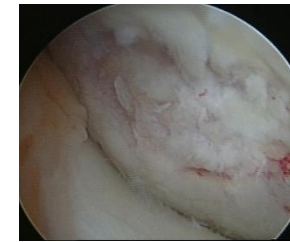
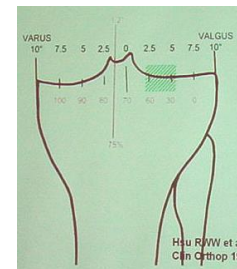
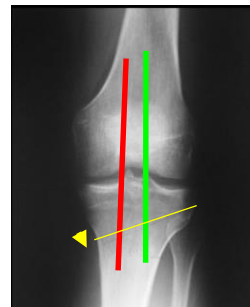
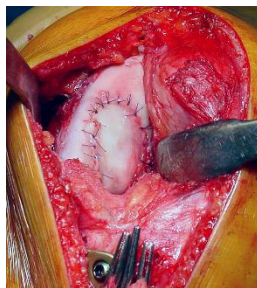
# Lavaža, debridement

- artroskopska ali odprta
  - indikacija le izjemoma
  - pri mehaničnih simptomih



# Ohranitvena kirurgija sklepa (JPS)

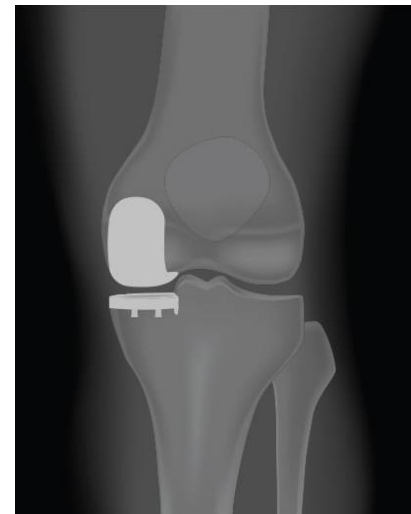
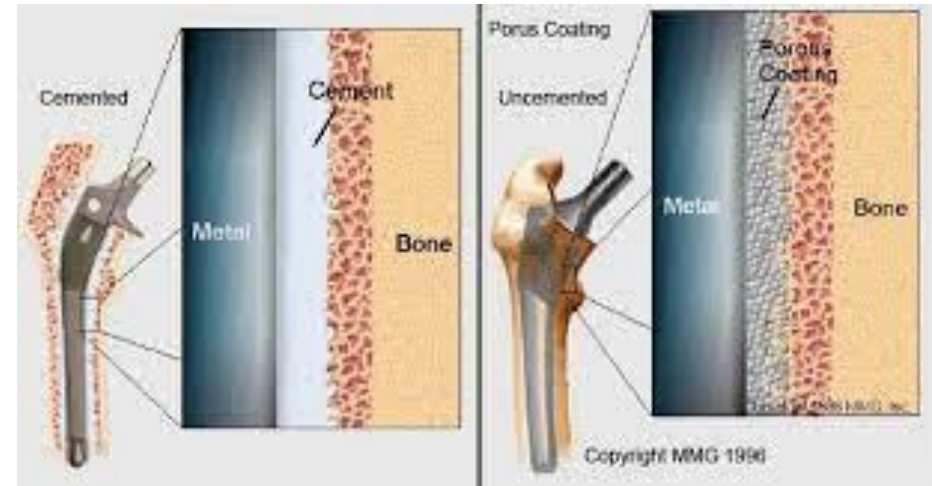
- reparacija sklepenega hrustanca pri OA indicirana izjemoma
- mehanična razbremenitev z osteotomijo
  - Korekcija varus (medialne) artroze na tibiji
    - HTO – high tibial osteotomy
  - Korekcija valgus (lateralne) artroze na femurju
    - DFO – distal femoral osteotomy
  - Cilj – odlog TEP kolena za 10-15 let





# Endoprotetika

- kolk, koleno, rama, gleženj
- parcialne, totalne, revizijske
- cementne, brez cementne



# Artrodeze

- zelo redko na proksimalnih sklepih
- domena distalnih sklepov zapestja/rok in gležnja/stopala
- gibljivost na račun bolečine



# Zaključki

- (osteo)atroza je drugi najpogostejši razlog obiska GP
- prepoznavna, edukacija bolnika, samopomoč
- zdravimo simptomatske paciente, ne RTG/MR slike
- stopenjsko zdravljenje
- zdravil z strukturnim efektom na hrustanec žal nimamo
- številne ukrepe za izboljšanje funkcije in kvalitete življenja

Umetnost medicine je, da zabava bolnika, dokler narava ne pozdravi bolezni.

Voltaire (1694 - 1778)

Če zaupate v Google bolj kot v svojega zdravnika, je skrajni čas, da zdravnika zamenjate.

Jadel in Cristina Cordova 2006