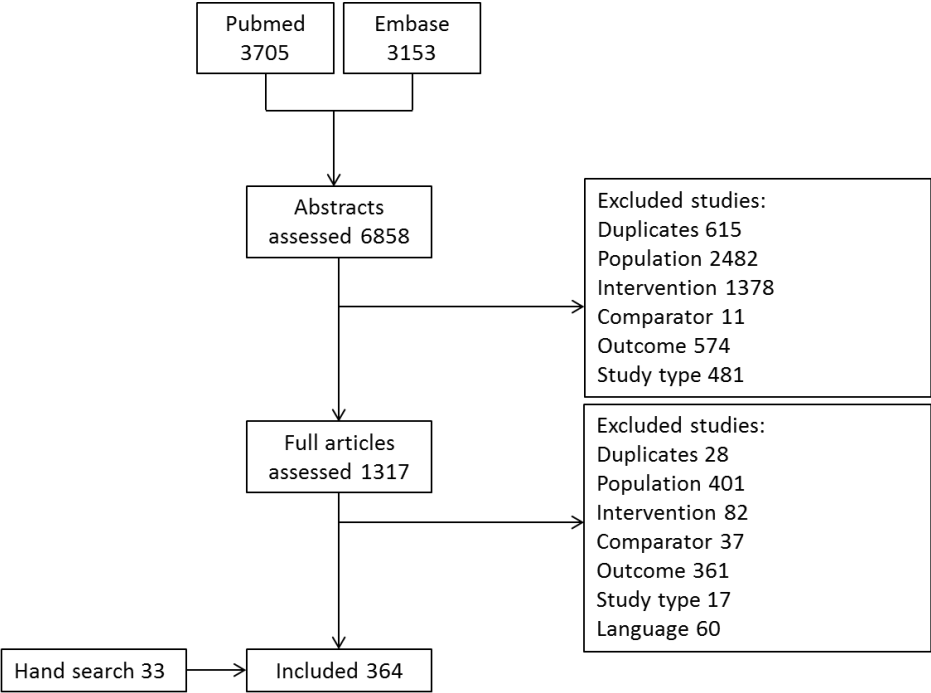
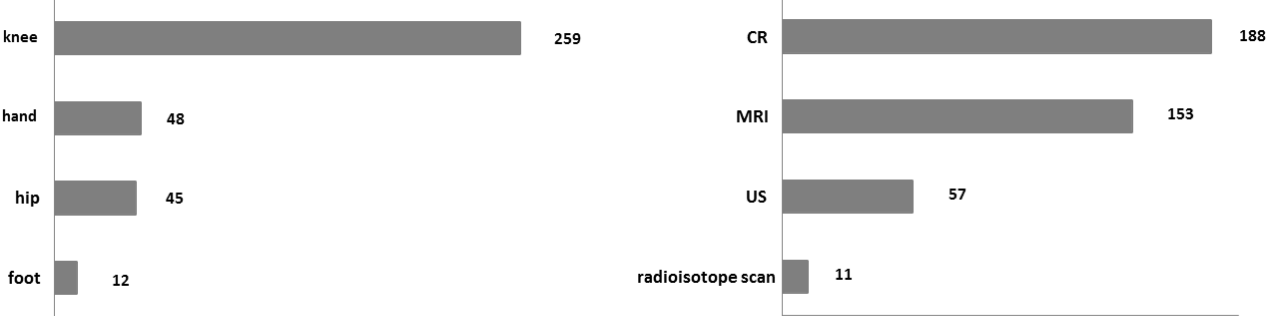


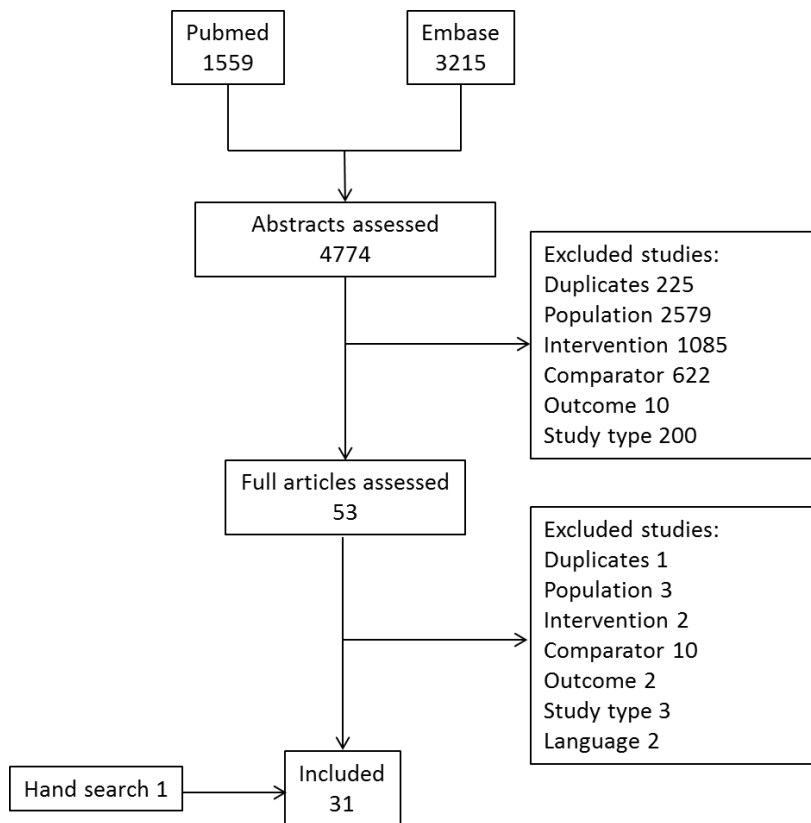
Supplementary figure S3: flow-chart showing the selection process of the initial literature search.



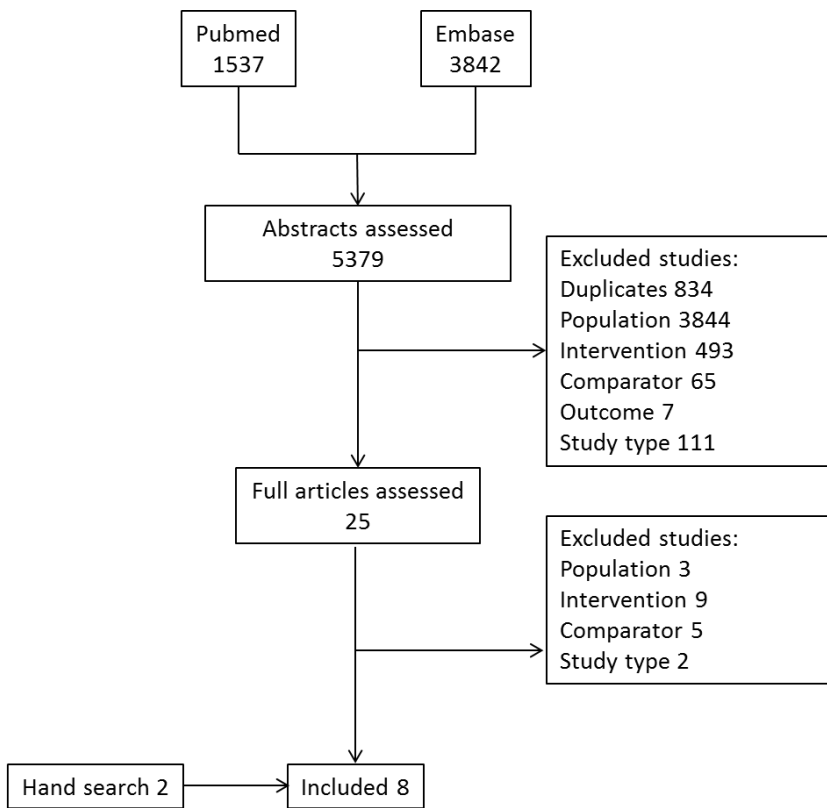
Supplementary Figure S4: number of studies included for each joint site and imaging modality. Studies could be included for more than one site and one imaging.



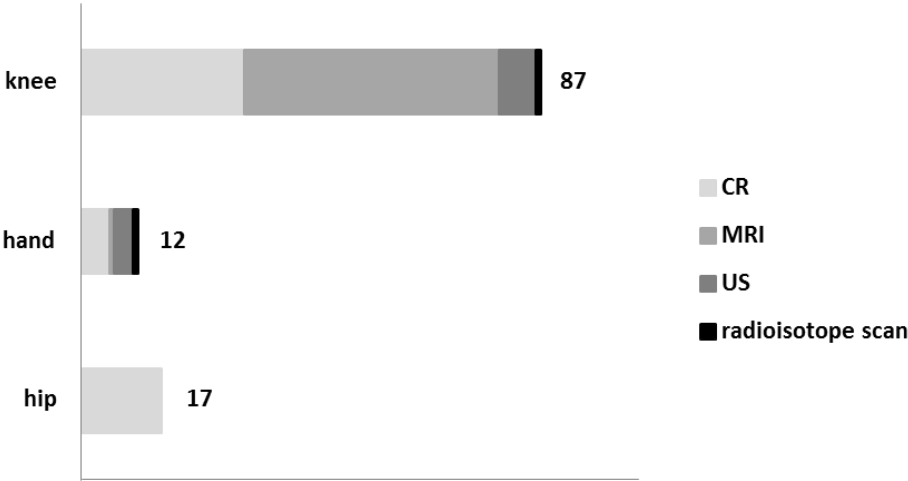
Supplementary figure S6: flow-chart showing the selection process of the literature search focused on the comparison of different radiographic views.



Supplementary figure S7: flow-chart showing the selection process of the literature search focused on the added value of imaging for intra-articular injections



Supplementary figure S9: studies evaluating imaging for the follow-up: number of studies per joint site and per imaging modality.



Supplementary file S10. Studies reporting changes in imaging findings after treatment

Study	N	Site	Study design	Imaging	Outcome
Acebes 2006	30	Knee	Cohort	US	Change in popliteal cyst sagittal area after steroid injection/ROM Significant correlation between change in the area and ROM ($r=0.380$, $p<0.05$)
Bandinelli 2012	40	Knee	Cohort	US	Change in popliteal cyst measures after steroid injection Significant reduction of longitudinal and transverse diameter and thickness
Keen 2011	36	Hand	Cohort	US	Correlation between GS and PD synovitis and decrease in pain after i.m. methylprednisolone No significant association between changes in GS and PD at 4 and 12 weeks and response
Klauser 2012	33	Hand	Cohort	US	Correlation between joint thickening and PD and pain after intraarticular hyaluronic acid Decrease in pain significantly correlated with the decrease of joint thickening ($r= 0.7$, $p < 0.001$) and PD score ($r = 0.8$, $p < 0.001$)

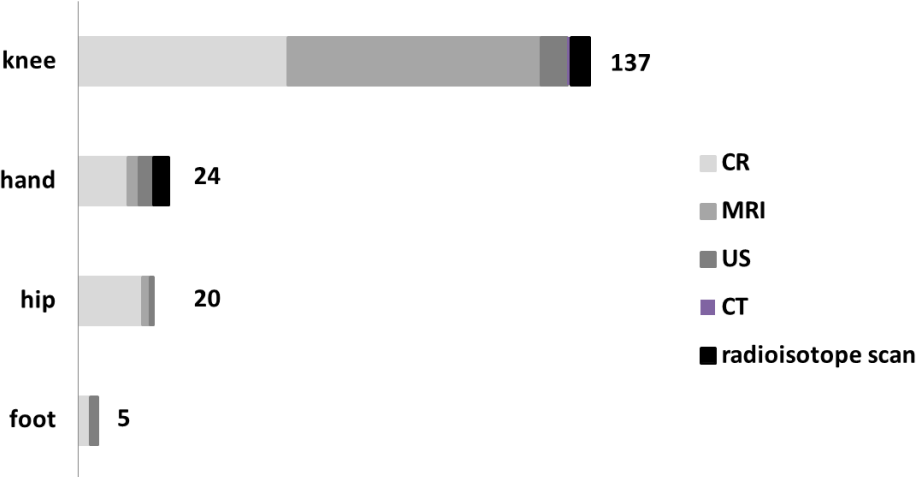
US: ultrasonography; ROM: range of motion; PD: power Doppler; GS: grey scale; r: Spearman's correlation coefficient

Supplementary file S11. Summary of studies examining the accuracy of imaging to detect OA lesions with surgery as reference standard

Study	N	Site	Study design	Imaging	Outcome
Bhattacharya 2007	77	Knee	Cross-sectional	CR	Performance of the skyline view to detect patellofemoral OA Se 0.81, Sp 0.60, LR+ 2.08, LR- 0.3
Chang 2008	151	Knee	Cross-sectional	CR	Performance of skyline view to detect patellofemoral JSN Se 0.83, Sp 0.50
Dervin 2001	152	Knee	Cross-sectional	CR	Performance of flexed vs extended radiographs for tibiofemoral JSN Full extension: Se 0.73, Sp 0.99 Flexion: Se 0.78, Sp 0.96
Waldstein 2013	84	Knee	Cross-sectional	CR	Correlation lateral JSW and KLG/Outerbridge grade for cartilage damage Poor correlation JSW: $r = -0.154$; $p = 0.146$ Significant correlation with lateral KLG: $r = 0.553$; $p = 0.001$
De Lange Borkaar 2014	42	Knee	Cross-sectional	MRI	Correlation with synovitis grade $r = 0.57$, $p < 0.001$
Fernandez Madrid 1995	9	Knee	Cross-sectional	MRI	Sensitivity to identify synovitis Se 1.0
Bergman 1994	9	Knee	Cross-sectional	MRI	Correspondence BMLs/fibrous replacement Subchondral signal abnormalities on MRI corresponded to areas of fibrous tissue replacement of fatty marrow
Broderick 1994	28	Knee	Cross-sectional	MRI	Performance of cartilage score Se 0.76, Sp 0.98, LR+ 49.65, LR- 0.24
Kalunian 2000	8	Knee	Cross-sectional	MRI	Performance to detect meniscal tears Se 0.33, Sp 0.96
Loeuille 2011	30	Knee	Cross-sectional	MRI	Correlation with effusion and synovitis No significant correlation
Saadat 2008	8	Knee	Cross-sectional	MRI	Performance to detect cartilage lesions Se 0.72, Sp 0.79
Takayama 2013	16	Knee	Cross-sectional	MRI	Performance of T1p and T2 for cartilage damage AUC = 0.881 (T1p); AUC = 0.681 (T2)
Von Engelhardt 2010	32	Knee	Cross-sectional	MRI	Performance of the grading of cartilage lesions Grade 1: Se 0.20, Sp 0.95 Grade 2: Se 0.52, Sp 0.78 Grade 3: Se 0.36, Sp 0.89 Grade 4: Se 0.70, Sp 0.94
Wong 2013	28	Knee	Cross-sectional	MRI	Correlation between T1p, T2 and glucoasaminoglican concentrations T1p and T2 inversely correlated
Yoshioka 2004	16	Knee	Cross-sectional	MRI	Performance to detect cartilage lesions Se 1.0, Sp 0.67
Zanetti 2000	16	Knee	Cross-sectional	MRI	Performance to detect BMLs Significant differences between the zone with the edema pattern and the control zone
Graichen 2004	21	Knee	Cross-sectional	MRI	Correlation with cartilage volume and thickness Cartilage volume: $r = 0.98$ Cartilage thickness: $r = 0.92$
Lee 2008	95	Knee	Cross-sectional	US	Correlation with US cartilage damage US cartilage grading correlated to histologic grading over anterior and middle areas ($r = 0.40$ and 0.36 , $p < 0.001$)
Moon 2010	83	Foot	Cross-sectional	CR	Concordance between radiographic scores and cartilage damage Correlation coefficient (95% CI) for KLG 0.53 (0.38, 0.66)
Toll 2004	60	Foot	Cross-sectional	CR	Performance to detect osteophytes Tibial: Se 0.85, Sp 0.45 Talar: Se 0.73, Sp 0.68
Haims 2004	85	Hand	Cross-sectional	MRI	Performance to detect cartilage damage Radius: Se 0.27, Sp 0.91 Scaphoid: Se 0.31, Sp 0.90 Lunate: Se 0.41, Sp 0.75 Triquetrium: Se 0.18, Sp 0.93
Leydet-Quilici 2010	23	Hip	Cross-sectional	MRI	Performance to detect BMLs Se 0.80, Sp 0.95
Taljanovic 2008	19	Hip	Cross-sectional	MRI	Correlation with BMLs No statistically significant correlation

CR: conventional radiography; MRI: magnetic resonance imaging; US: ultrasonography; OA: osteoarthritis; JSN: joint space narrowing; KLG: Kellgren and Lawrence grade; JSW: joint space width; Se: sensitivity; Sp: specificity; LR+: positive likelihood ratio; LR-: negative likelihood ratio; r: Spearman's correlation coefficient; 95% CI: 95% confidence interval; AUC: area under the curve

Supplementary figure S12: studies evaluating imaging for making a prognosis: number of studies per joint site and per imaging modality.



Supplementary file S13. Studies comparing imaging-guided to blind injections in conditions other than OA

Study	N	Site	Study design	Imaging	Outcome	
Cunnington 2010	184	Knee	RCT	US	US guided vs blind injections of trimacinolone 40 mg in terms of pain, stiffness, function, QoL and accuracy at 6 weeks	Significantly better accuracy of US guided procedure and better QoL at 2 weeks, no differences in the remaining outcomes at 2 weeks and 6 weeks
Curtiss 2011	20	Knee	Cross-sectional	US	Accuracy of US guided vs blind injection in cadaveric specimen	US guided injection significantly more accurate compared to blind
Luz 2008	60	Hand	RCT	US	US guided vs blind CS injection in wrists in IA in terms of pain relief, edema and function at 12 weeks	No significant differences for all outcomes
Sibbitt 2009	150	Knee	RCT	US	US guided vs blind CS injection in IA in terms of pain relief, pain related to the injection, proportion of responders and non-responders at 2 weeks	US guided procedure led to significantly better pain relief, less pain related to the injection and a better clinical response
Balint 2002	61	Knee Foot	Cross-sectional	US	Success of US guided vs blind joint aspiration in inflammatory arthritis	US guided aspiration was more frequently successful

RCT: randomized controlled trial; US: ultrasonography; QoL: quality of life; CS: corticosteroids; IA: inflammatory arthritis.