**Supplementary table 4.** Summary of studies on the assessment of inflammatory activity at joint level

| Studies | Study design | Study population (n) | Disease activity (mean) | Disease duration (mean) | Diagnostic test | | Reference standard | | Time interval | Sensitivity, % (95% CI) | Specificity, % (95% CI) | PPV, % (95% CI) | NPV, % (95%CI) | PPV, % (95% CI) | NPV, % (95% CI) | OR (95%CI, p-value) | Correlation coefficient (95% CI, p-value) | Other | Risk of bias*1 | Risk of bias of individual studies included in | Concerns regarding applicability^3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Description | Cut-off (if applicable) | Description | Cut-off (if applicable) | | | | | | | | | | | | | | |
| **Imaging vs clinical assessment** | | | | | | | | | | | | | | | | | | | | | |
| Agrawal, 2009 | Cross-sectional | RA patients who had undergone US (n=165) | NR | NR | Musculoskeletal US per joint | NR | Clinical diagnosis per joint | Mutual agreement of 2 rheumatologists | Same time point | | | | | | | | | Treatment influenced on the basis of MSUS findings: 51.7% | H/H/U/L | | H/L/H |
| Besselink, 2018 | Cross-sectional | RA patients (n=50) | DAS28-ESR 3.9 (1.20) | NR | Optical spectral transmission (OST) model (seperately per joint, for joints of both hands together) | k 0.30 | Clinically swollen joints | positive/negative per joint, for all joints of both hands together | Same day | | | | | 46 (39-52) | 86 (84-88) | | | | L/H/L/L | | H/L/L |
| | | | | | Optical spectral transmission (OST) model (seperately per joint, for joints of both hands together) | k 0.24 | Clinically tender joints | positive/negative per joint, for all joints of both hands together | Same day | | | | | 50 (44-57) | 78 (76-81) | | | | L/H/H/L | | |
| Meier, 2012 | Cross-sectional | RA patients (n=67) | NR | NR | Optical spectral transmission measure of the PIP joint with the highest level of inflammation (mostly 1/patient, sometimes 2), per joint | NA | Clinical diagnosis of joint inflammation of PIP joint with the highest level of inflammation (mostly 1/patient, sometimes 2), score 1-5, per joint | NA | NR | | 88 | | | | | | r=0.63 (0.47-0.75, p<0.0001) | | L/L/H/U | | H/L/H |
| Van Onna, 2016 | Case control | RA patients in different categories of disease activity: DAS28<2.6, 2.6-5.1, >5.1 (n=59) | DAS28 3.6 | 1-9Y (range of medians) | Optical spectral transmission (OST) in PIP joints, at joint level | 0.11 | Clinically swollen PIP joints, per joint | Presence/absence | Same day (within window of 4h) | 59 | 86 | | | | | | | | L/H/L/L | | H/L/L |
| | | | | | Optical spectral transmission (OST) in MCP joints, at joint level | 0.26 | Clinically swollen wrist joints, per joint | Presence/absence | Same day (within window of 4h) | 42 | 93 | | | | | | | | | | |
| | | | | | Optical spectral transmission (OST) in wrist joints, at joint level | 1.0 | Clinically swollen MCP joints, per joint | Presence/absence | Same day (within window of 4h) | 37 | 89 | | | | | | | | | | |
| **Clinical assessment vs imaging** | | | | | | | | | | | | | | | | | | | | | |
| Inamo, 2018^ | Cross-sectional | RA patients who underwent both psysical examination and ultrasonography (n=61) | DAS28 4.0 vs 2.4, p<0.05 (patients with joint swelling in feet and ankles vs those without, by physical examination) | 7.1Y | Swollen joints by physical examination per joint | NA | US: synovitis per joint | NA | NR | | | | | | 40 | | | | L/U/H/U | | H/L/L |
| Krabbe, 2016^ | Cross-sectional | RA patients (n=62) | DAS28 3.6, median | NR | Swelling of wrists, MCP1-5, (P)IP1-5 of both hands, per joint | Present/absent | US: Colour doppler of wrists, MCP1-5, (P)IP1-5 of both hands, score 0-3, per joint | ≥1 | NR | 41 | 93 | | | | | | k 0.35 | | L/U/H/U | | H/L/L |
| | | | | | Tenderness of wrists, MCP1-5, (P)IP1-5 of both hands, per joint | Present/absent | US: Colour doppler of wrists, MCP1-5, (P)IP1-5 of both hands, score 0-3, per joint | ≥1 | NR | 34 | 91 | | | | | | k 0.25 | | | | |
| Matteson, 2009 | Cross-sectional | RA patients (n=40) | NR | NR | SJC66, per joint | NR | FolateScan (Technetium-99m EC20; 99mTc-EC20). EC20 is a folate-targeted diagnostic radiopharmaceutical which binds to the folate receptor and is preferentially taken up by activated macrophages. | NR | NR | 47 | 85 | | | 21 | 95 | | | Accuracy 82% | L/U/H/U | | H/L/L |
| | | | | | TJC66, per joint | NR | FolateScan (Technetium-99m EC20; 99mTc-EC20). EC20 is a folate-targeted diagnostic radiopharmaceutical which binds to the folate receptor and is preferentially taken up by activated macrophages. | NR | NR | 36 | 85 | | | 22 | 92 | | | Accuracy 80% | | | |
| | | | | | SJC/TJC66 according to rheumatologist, per joint | NR | FolateScan (Technetium-99m EC20; 99mTc-EC20). EC20 is a folate-targeted diagnostic radiopharmaceutical which binds to the folate receptor and is preferentially taken up by activated macrophages. | NR | NR | 40 (26-55) | 86 (82-90) | | | 32 (21-43) | 90 (85-95) | | | Accuracy 80% (95%CI 75-84) | | | |
| | | | | | SJC28, per joint | NR | FolateScan (Technetium-99m EC20; 99mTc-EC20). EC20 is a folate-targeted diagnostic radiopharmaceutical which binds to the folate receptor and is preferentially taken up by activated macrophages. | NR | NR | 46 | 79 | | | 26 | 90 | | | Accuracy 74% | | | |
| | | | | | TJC28, per joint | NR | FolateScan (Technetium-99m EC20; 99mTc-EC20). EC20 is a folate-targeted diagnostic radiopharmaceutical which binds to the folate receptor and is preferentially taken up by activated macrophages. | NR | NR | 38 | 78 | | | 22 | 88 | | | Accuracy 72% | | | |

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| | | | | SJC/TJC28, per joint | NR | FolateScan (Technetium-99m EC20; 99mTc-EC20). EC20 is a folate-targeted diagnostic radiopharmaceutical which binds to the folate receptor and is preferentially taken up by activated macrophages. | NR | NR | 42 | 80 | 35 | 84 | Accuracy 72% | | | | |
| **Biomarker vs imaging** | | | | | | | | | | | | | | | | | | |
| do Prado, 2016 | Cross-sectional | RA patients (n=64) | DAS28-ESR 4.02 | 5Y IL-2 | NA | US: PD of right wrist (0-3) | NA | Same day | | | | | r=0.17 (-0.07-0.40, ns) | L/L/H/L | | H/L/L | |
| | | | | IL-2 | NA | US: PD of left wrist (0-3) | NA | Same day | | | | | r=0.05 (-0.21-0.32, ns) | | | | |
| | | | | IL-2 | NA | US: GS of right wrist (0-3) | NA | Same day | | | | | r=0.22 (-0.01-0.49, ns) | | | | |
| | | | | IL-2 | NA | US: GS of left wrist (0-3) | NA | Same day | | | | | r=0.05 (-0.20-0.30, ns) | | | | |
| | | | | IL-4 | NA | US: PD of right wrist (0-3) | NA | Same day | | | | | r=0.26 (0.01–0.48), ns | | | | |
| | | | | IL-4 | NA | US: PD of left wrist (0-3) | NA | Same day | | | | | r=0.20 (-0.58–0.46), ns | | | | |
| | | | | IL-4 | NA | US: GS of right wrist (0-3) | NA | Same day | | | | | r=0.29 (0.05–0.54), p≤0.05 | | | | |
| | | | | IL-4 | NA | US: GS of left wrist (0-3) | NA | Same day | | | | | r=0.15 (-0.11–0.39), ns | | | | |
| | | | | IL-6 | NA | US: PD of right wrist (0-3) | NA | Same day | | | | | r=0.34 (0.11–0.54), p<0.01 | | | | |
| | | | | IL-6 | NA | US: PD of left wrist (0-3) | NA | Same day | | | | | r=0.45 (0.21–0.64), p<0.01 | | | | |
| | | | | IL-6 | NA | US: GS of right wrist (0-3) | NA | Same day | | | | | r=0.40 (0.20–0.59), p<0.01 | | | | |
| | | | | IL-6 | NA | US: GS of left wrist (0-3) | NA | Same day | | | | | r=0.35 (0.08–0.57), p<0.01 | | | | |
| | | | | IL-10 | NA | US: PD of right wrist (0-3) | NA | Same day | | | | | r=0.19 (-0.05–0.43), ns | | | | |
| | | | | IL-10 | NA | US: PD of left wrist (0-3) | NA | Same day | | | | | r=0.12 (-0.11–0.34), ns | | | | |
| | | | | IL-10 | NA | US: GS of right wrist (0-3) | NA | Same day | | | | | r=0.17 (-0.12–0.43), ns | | | | |
| | | | | IL-10 | NA | US: GS of left wrist (0-3) | NA | Same day | | | | | r=0.06 (-0.17-0.28), ns | | | | |
| | | | | IL-17 | NA | US: PD of right wrist (0-3) | NA | Same day | | | | | r=0.16 (-0.13–0.41), ns | | | | |
| | | | | IL-17 | NA | US: PD of left wrist (0-3) | NA | Same day | | | | | r=0.18 (-0.10–0.44), ns | | | | |
| | | | | IL-17 | NA | US: GS of right wrist (0-3) | NA | Same day | | | | | r=0.14 (-0.10-0.38), ns | | | | |
| | | | | IL-17 | NA | US: GS of left wrist (0-3) | NA | Same day | | | | | r=0.12 (-0.12–0.34), ns | | | | |
| | | | | TNF | NA | US: PD of right wrist (0-3) | NA | Same day | | | | | r=0.23 (-0.02–-0.47), ns | | | | |
| | | | | TNF | NA | US: PD of left wrist (0-3) | NA | Same day | | | | | r=-0.03 (-0.31–0.23), ns | | | | |
| | | | | TNF | NA | US: GS of right wrist (0-3) | NA | Same day | | | | | r=0.17 (-0.08-0.43), ns | | | | |
| | | | | TNF | NA | US: GS of left wrist (0-3) | NA | Same day | | | | | r=0.002 (-0.25-0.25), ns | | | | |
| | | | | IFN | NA | US: PD of right wrist (0-3) | NA | Same day | | | | | r=-0.10 (-0.34-0.14), ns | | | | |
| | | | | IFN | NA | US: PD of left wrist (0-3) | NA | Same day | | | | | r=0.06 (-0.18-0.31), ns | | | | |
| | | | | IFN | NA | US: GS of right wrist (0-3) | NA | Same day | | | | | r=0.02 (-0.26-0.29), ns | | | | |
| | | | | IFN | NA | US: GS of left wrist (0-3) | NA | Same day | | | | | r=0.03 (-0.24-0.29), ns | | | | |
| | | | | VEGF | NA | US: PD of right wrist (0-3) | NA | Same day | | | | | r=0.04 (-0.20-0.26), ns | | | | |
| | | | | VEGF | NA | US: PD of left wrist (0-3) | NA | Same day | | | | | r=-0.05 (-0.29-0.20), ns | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | VEGF | NA | US: GS of right wrist (0-3) | NA | Same day | | | | | | r=0 (-0.26-0.23), ns | | | | |
| | | | | VEGF | NA | US: GS of left wrist (0-3) | NA | Same day | | | | | | r=-0.1 (-0.35-0.14), ns | | | | |
| **Imaging vs imaging** | | | | | | | | | | | | | | | | | | |
| Abdelzaher, 2019 | Cross-sectional | RA patients with shoulder pain (n=30) | DAS28-ESR 4.41 | 54M, median | Biceps tenosynovitis on US | NR | Biceps tenosynovitis on MRI | NR | Same day | 87.5 | 97.6 | | | 93.3 | 95.3 | | | L/L/H/L | | H/L/L |
| | | | | | Subscapularis tenosynovitis on US | NR | Subscapularis tenosynovitis on MRI | NR | Same day | 91.7 | 97.8 | | | 91.7 | 97.8 | | | | | |
| Amitai, 2015 | Case control | RA patients (n=38) | DAS28 4.3 (1.7) | NR | Lightscan (photo optical imaging) per joint | Mean sum 1.31 | Musculoskeletal ultrasonography (synovitis and tenosynovitis) per joint | NR | Same day | 74 | 93 | | | | | | | L/H/H/L | | H/L/H |
| Besselink, 2018 | Cross-sectional | RA patients (n=50) | DAS28-ESR 3.9 (1.20) | NR | Optical spectral transmission (OST) model (seperately per joint, for joints of both hands together) | k 0.47 | US (wrists and, in the hands, MCPs 1⁋-5, PIPs 2⁋-5 and IP 1) | positive/negative per joint, for all joints of both hands together | Same day | | | | | 60 (53-67) | 89 (86-91) | | r=0.54 (95%CI 0.28-0.73, p<0.01) | L/H/L/L | | H/L/L |
| Boesen, 2012 | Cross-sectional | RA patients (n=50) | DAS28 4.8 | 87.2M | US: Colour fraction calculation out of colour Doppler of one wrist joint | NA | MRI with gadolinium injection of the wrist: total RAMRIS synovitis score | NA | Same day (within a 2 hour interval) | | | | | | | r=0.42, p<0.006 | | L/L/H/L | | H/L/L |
| | | | | | US: Colour fraction calculation out of colour Doppler of one wrist joint | NA | MRI with gadolinium injection of the wrist: MRI synovitis radiocarpal joint score | NA | Same day (within a 2 hour interval) | | | | | | | r=0.43, p<0.005 | | | | |
| | | | | | US: Colour fraction calculation out of colour Doppler of one wrist joint | NA | MRI with gadolinium injection of the wrist: Average MRI thickness synovitis in the radiocarpal joint | NA | Same day (within a 2 hour interval) | | | | | | | r=0.296, p=0.06 | | | | |
| Hermann, 2003 | Cross-sectional | RA patients with shoulder pain (n=43) | NR | 6.8Y | Contrast-enhanced MRI: synovitis of the glenohumeral joint | NA | US: synovitis of the shoulder | NA | Same day (not all patients could undergo the MRI on the same day as US) | 92 | 48 | 41% | 94% | 41 | 94 | | k 0.29 (95%CI 0.08-0.50, p=0.0318) | L/L/H/L | | H/L/L |
| Kawashiri, 2015 | Cross-sectional | RA patients (n=14) | DAS28-ESR 5.81 | 30M, median | Automated Breast Volume Scanner of bilateral wrists, per joint | NA | US: Gray scale of bilateral wrists, score 0-3, per joint | NA | Same day | | | | | | | | k 0.79 | L/L/H/L | | H/L/L |
| | | | | | Automated Breast Volume Scanner of MCP1-5 of both hands, per joint | NA | US: Gray scale of MCP1-5 of both hands, score 0-3, per joint | NA | Same day | | | | | | | | k 0.60 | | | |
| | | | | | Automated Breast Volume Scanner of bilateral wrists, per joint | NA | US: Gray scale of bilateral wrists, score 0-3, per joint | ≥2 | Same day | | | | | | | | k 1.00 | | | |
| | | | | | Automated Breast Volume Scanner of MCP1-5 of both hands, per joint | NA | US: Gray scale of MCP1-5 of both hands, score 0-3, per joint | ≥2 | Same day | | | | | | | | k 0.92 | | | |
| Krabbe, 2016^ | Cross-sectional | RA patients (n=62) | DAS28 3.6, median | NR | Optical spectral transmission imaging of wrists, MCP1-5, (P)IP1-5 of both hands, per joint | >0.521 | US: Colour doppler of wrists, MCP1-5, (P)IP1-5 of both hands, score 0-3, per joint | ≥1 | NR | 54 | 79 | 27 | 93 | | | | k 0.23; AUC-ROC 0.69, p<0.001 | L/U/H/U | | H/L/L |
| | | | | | Optical spectral transmission imaging of wrists, MCP1-5, (P)IP1-5 of both hands, per joint | >0.521 | US: Colour doppler of wrists, MCP1-5, (P)IP1-5 of both hands, score 0-3, per joint | ≥2 | NR | | | | | | | | AUC-ROC 0.71 | | | |
| | | | | | Optical spectral transmission imaging of wrists, MCP1-5, (P)IP1-5 of both hands, per joint | >0.521 | US: Colour doppler OR GS of wrists, MCP1-5, (P)IP1-5 of both hands, score 0-3, per joint | ≥2 | NR | | | | | | | | AUC-ROC 0.70 | | | |
| | | | | | Optical spectral transmission imaging of wrists, MCP1-5, (P)IP1-5 of both hands, per joint | >0.521 | US: Colour doppler OR GS of wrists, MCP1-5, (P)IP1-5 of both hands, score 0-3, per joint | ≥1 | NR | | | | | | | | AUC-ROC 0.65 | | | |
| | | | | | Optical spectral transmission imaging of (P)IP1-5 of both hands, per joint | >0.521 | US: Colour doppler of (P)IP1-5 of both hands, score 0-3, per joint | ≥1 | NR | 29 | 89 | | | | | | k 0.12; AUC-ROC 0.71, p=0.001 | | | |
| | | | | | Optical spectral transmission imaging of MCP1-5 of both hands, per joint | >0.521 | US: Colour doppler of MCP1-5 of both hands, score 0-3, per joint | ≥1 | NR | 44 | 75 | | | | | | k 0.15; AUC-ROC 0.60, p=0.003 | | | |
| | | | | | Optical spectral transmission imaging of wrists of both hands, per joint | >0.521 | US: Colour doppler of wrists of both hands, score 0-3, per joint | ≥1 | NR | 91 | 24 | | | | | | k 0.09; AUC-ROC 0.58, ns | | | |
| Ngai ng, 2019^ | Cross-sectional | RA patients (n=19) | DAS28-CRP 4.66, median | 5.5Y, median | Whole body magnetic resonance imaging: per joint, wrists/MCP2/MCP5/PIP5, joint inflammation was definedin two ways; 1) as presence of synovitis and/or osteitis, 2) as the presence of syn-ovitis only (28 conventional joints, bilateral ankles, MTP1-5) | NA | Ultrasound: per joint, wrists/MCP2/MCP5/PIP5 (conventional joints; US was graded 0-3 on both B-mode and colour Doppler(CD), and subsequently converted to +/- by defining US synovitis as B mode ≥2 or CD ≥1) | NA | NR | | | | | | | | k=0.42-0.62 | L/U/H/U | | H/L/H |
| | | | | | Whole body magnetic resonance imaging: per joint, other joints, joint inflammation was definedin two ways; 1) as presence of synovitis and/or osteitis, 2) as the presence of syn-ovitis only (28 conventional joints, bilateral ankles, MTP1-5) | NA | Ultrasound: per joint, other joints; US was graded 0-3 on both B-mode and colour Doppler(CD), and subsequently converted to +/- by defining US synovitis as B mode ≥2 or CD ≥1) | NA | NR | | | | | | | | k≤0.37 | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Whole body magnetic resonance imaging: per joint, wrists/MCP2/MCP5/PIP5, joint inflammation was defined as the presence of synovitis (28 conventional joints, bilateral ankles, MTP1-5) | NA | Ultrasound: per joint, wrists/MCP2/MCP5/PIP5 (conventional joints; US was graded 0-3 on both B-mode and colour Doppler(CD), and subsequently converted to +/- by defining US synovitis as B mode ≥2 or CD ≥1) | NA | NR | | | | | k=0.42-0.66 | | | |
| | | | | | Whole body magnetic resonance imaging: per joint, other joints, joint inflammation was defined as the presence of synovitis only (28 conventional joints, bilateral ankles, MTP1-5) | NA | Ultrasound: per joint, other joints; US was graded 0-3 on both B-mode and colour Doppler(CD), and subsequently converted to +/- by defining US synovitis as B mode ≥2 or CD ≥1) | NA | NR | | | | | k≤0.36 | | | |
| Schäfer, 2013 | Cross-sectional | RA patient (n=18) | DAS28 4.6 (1.6) | 4.9Y | Fluorescence optical imaging (FOI): Fluorescence readout of indocyanine green in phase 3 (241-360 seconds) for carpal joints, at joint level | >1.2 | MRI of carpal joint of dominant hand, at joint level | Presence/absence (RAMRIS) | Within 2D | 87 (62-96) | 0 (0-56) | | | | L/H/H/L | | H/L/L |
| | | | | | Fluorescence optical imaging (FOI): Fluorescence readout of indocyanine green in phase 3 (241-360 seconds) for MCP joints, at joint level | >1.2 | MRI of MCP joints of dominant hand, at joint level | Presence/absence (RAMRIS) | Within 2D | 42 (23-62) | 92 (70-99) | | | | | | |
| | | | | | Fluorescence optical imaging (FOI): Fluorescence readout of indocyanine green in phase 3 (241-360 seconds) for PIP joints, at joint level | >1.2 | MRI of PIP joints of dominant hand, at joint level | Presence/absence (RAMRIS) | Within 2D | 100 (57-100) | 77 (57-90) | | | | | | |
| Scheel, 2005 | Cross-sectional | RA patients (n=13) | NR | 4.3Y | Sagittal laser optical tomography of PIP2-4 joints of clinically dominant hand, per joint | Min(ma) = 0.272 cm with Youden index of 0.41 | US of PIP2-4 joints of clinically dominant hand, score 0-3 per joint, per joint | >1 | NR | 70.5 | 70.5 | | | AUC-ROC 0.777 | L/H/H/L | | H/L/L |
| | | | | | Sagittal laser optical tomography of PIP2-4 joints of clinically dominant hand, per joint | Min(ma) = 0.41 cm with Youden index of 0.41 | US of PIP2-4 joints of clinically dominant hand, score 0-3 per joint, per joint | >1 | NR | 73.6 | 67.4 | | | | | | |
| Van Onna, 2016 | Case control | RA patients in different categories of disease activity: DAS28<2.6, 2.6-5.1, >5.1 (n=59) | DAS28 3.6 | 1-9Y (range of medians) | Optical spectral transmission (OST) in PIP joints, at joint level | 0.11 | US: GS and PD in PIP joints, at joint level | US inflammation: GS>1 and/or PD>0 | Same day (within window of 4h) | 83 | 64 | | | AUC-ROC 0.79 (95%CI 0.72-0.86, p<0.0001) | L/H/H/L | | H/L/L |
| | | | | | Optical spectral transmission (OST) in MCP joints, at joint level | 0.26 | US: GS and PD in MCP joints, at joint level | US inflammation: GS>1 and/or PD>0 | Same day (within window of 4h) | 70 | 74 | | | AUC-ROC 0.78 (95%CI 0.71-0.83, p<0.0001) | | | |
| | | | | | Optical spectral transmission (OST) in wrist joints, at joint level | 1.0 | US: GS and PD in wrist joints, at joint level | US inflammation: GS>1 and/or PD>0 | Same day (within window of 4h) | 39 | 87 | | | AUC-ROC 0.62 (95%CI 0.52-0.72, p=0.006) | | | |
| Takase-Minegishi, 2018 | SLR: 14 (quantitative analysis: 14) | RA patients (n=376) | NR | NR | Synovitis of wrist joints on US (in 5 cohorts: including PD, GS, PD+GS), per joint | Based on judgement by the authors | Synovitis of wrist joints on MRI (including (non-)enhanced, dynamic, 1.5T, 3T, compact, low-field extremity and 0.2T MRI), per joint | Based on judgement by the authors | NR | 0.73 (0.51-0.87) | 0.78 (0.46-0.94) | 11.6 (5.6-24, -) | | AUC-ROC 0.81; Overall conclusion: US is a valid and reproducible technique for detecting synovitis in the wrist and finger joints. It may be considered for routine use as part of the standard diagnostic tools in RA. | Moderate | Moderate (1 study with high RoB) | - |
| | | | | | Synovitis of MCP joints on US (in 12 cohorts: including PD, GS, PD+GS), per joint | Based on judgement by the authors | Synovitis of MCP joints on MRI (including (non-)enhanced, dynamic, 1.5T, 3T, compact, low-field extremity and 0.2T MRI), per joint | Based on judgement by the authors | NR | 0.64 (0.43-0.81) | 0.93 (0.88-0.97) | 28 (12-66, -) | | AUR-ROC 0.91 | | | |
| | | | | | Synovitis of PIP joints on US (in 6 cohorts: including PD, GS, PD+GS), per joint | Based on judgement by the authors | Synovitis of PIP joints on MRI (including (non-)enhanced, dynamic, 1.5T, 3T, compact, low-field extremity and 0.2T MRI), per joint | Based on judgement by the authors | NR | 0.71 (0.33-0.93) | 0.94 (0.89-0.97) | 23 (6.5-84, -) | | AUR-ROC 0.91 | | | |
| | | | | | Synovitis of knee joints on US (in 3 cohorts: including PD, GS, PD+GS), per joint | Based on judgement by the authors | Synovitis of knee joints on MRI (including (non-)enhanced, dynamic, 1.5T, 3T, compact, low-field extremity and 0.2T MRI), per joint | Based on judgement by the authors | NR | 0.91 (0.56-0.99) | 0.60 (0.20-0.90) | 5.2 (0.60-48, -) | | AUR-ROC 0.91 | | | |
| **Imaging vs histology** | | | | | | | | | | | | | | | | | | |
| Filer, 2017^ | Cross-sectional | RA patients with at least 1 joint amenable to biopsy (n=15) | NR | NR | GS US per joint | NA | Krenn index of cellular inflammation (histology obtained by synovial biopsy) | NA | NR | | | | r=0.65, p<0.01 | | L/L/H/L | | H/L/L |
| | | | | | GS US per joint | NA | Krenn lining layer score (histology obtained by synovial biopsy) | NA | NR | | | | r=0.52, p<0.05 | | | | |
| | | | | | PD US per joint | NA | Krenn index of cellular inflammation (histology obtained by synovial biopsy) | NA | NR | | | | p=0.34 | | | | |
| | | | | | PD US per joint | NA | Krenn lining layer score (histology obtained by synovial biopsy) | NA | NR | | | | p=0.48 | | | | |

*ACPA: anti-citrullinated protein antibody; AUC-ROC: area under the curve - receiver operating characteristic; BL: baseline; BMI: body mass index; CDAI: clinical disease activity index; CI: confidence interval; CMC: carpometacarpal; CRP: C-reactive protein; D: days; DAS28: disease activity score assessing 28 joints; DIP: distal interphalangeal; ESR: erythrocyte sedimentation rate; GS: Gray scale; h: hours; H: high; IFN: interferon; IL: interleukin; IP: interphalangeal; IQR: interquartile range; k: kappa agreement; l: liter; L: low; M: months; MBDA: multi-biomarker disease activity score; MCP: metacarpophalangeal; mm: milimeter; MMP: matrix metalloproteinase; MRI: magnetic resonance imaging; MTP: metatarsophalangeal; n: number of patients; NA: not applicable; ng: nanogram; NPV: negative predictive value; NR: not reported; ns: not significant; OR: odds ratio; PD: power doppler; PIP: proximal interphalangeal; PPV: positive predictive value; RA: rheumatoid arthritis; RAPID3: routine assessment of patient index data 3; RAMRIS: rheumatoid arthritis MRI scoring system; RF: rheumatoid factor; s: significant; RoB: risk of bias; SDAI: simplified disease activity index; SJC: swollen joint count; SLR: systematic literature review; STIR: short tau inversion recovery; TIMP: tissue inhibitor of metalloproteinase; TJC: tender joint count; TMT: tarsometatarsal; TNF: tumor necrosis factor; U: unclear; US: ultrasonography; VEGF: vascular endothelial growth factor; W: weeks; Y: years; ^: abstract.*

*1. Risk of Bias according to QUADAS-2 for individual studies: Patient selection/Index test/Reference standard/Flow and timing; According to AMSTAR2 tool for SLRs: Low=zero or one non-critical weakness; Moderate=more than one non-critical weakness; High=one critical flaw with or without non-critical weaknessess; Critically high=more than one critical flaw with or without non-critical weaknesses; 2. Only applicable for SLRs: Summary of RoB of individual studies, as assessed in SLRHighest risk of bias as found (of individual studies). 3. Concerns regarding applicability for individual studies: Patient selection/Index test/Reference standard.*