

Supplementary figure 1. Questionnaire on subjective symptoms of arthralgia. The original questionnaire was written in Japanese.

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| *Supplementary table 1.* Concordance between US findings and subjective symptoms of patients separated by functional disability. |
| Joints |  Functional remission† |  |  Functional non-remission† |
|  n‡ | PABAK |  |  n‡ | PABAK |
| MCP1 Right | 265 | 0.645 |  | 138 | 0.478 |
|  Left | 266 | 0.662 |  | 138 | 0.565 |
| MCP2 Right | 265 | 0.404 |  | 136 | 0.118 |
|  Left | 266 | 0.496 |  | 134 | 0.358 |
| MCP3 Right | 266 | 0.594 |  | 136 | 0.338 |
|  Left | 266 | 0.714 |  | 135 | 0.467 |
| MCP4 Right | 266 | 0.774 |  | 136 | 0.456 |
|  Left | 266 | 0.782 |  | 136 | 0.603 |
| MCP5 Right | 266 | 0.767 |  | 136 | 0.412 |
|  Left | 266 | 0.805 |  | 136 | 0.647 |
| IP1 Right | 265 | 0.758 |  | 137 | 0.518 |
|  Left | 266 | 0.797 |  | 137 | 0.620 |
| PIP2 Right | 265 | 0.721 |  | 136 | 0.618 |
|  Left | 266 | 0.774 |  | 137 | 0.620 |
| PIP3 Right | 266 | 0.692 |  | 133 | 0.519 |
|  Left | 266 | 0.820 |  | 135 | 0.585 |
| PIP4 Right | 266 | 0.737 |  | 131 | 0.618 |
|  Left | 266 | 0.820 |  | 135 | 0.659 |
| PIP5 Right | 266 | 0.797 |  | 135 | 0.630 |
|  Left | 266 | 0.850 |  | 134 | 0.716 |
| Wrist Right | 265 | -0.019 |  | 137 | -0.022 |
|  Left | 264 | -0.083 |  | 138 | 0.014 |
| †Functional remission: the Health Assessment Questionnaire (HAQ) ≤ 0.5; Functional non-remission: HAQ > 0.5. ‡Joints with deficits in US data were excluded. US: ultrasound; PABAK: prevalence-adjusted bias-adjusted kappa; MCP: metacarpophalangeal; (P)IP: (proximal) interphalangeal. |

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| *Supplementary table 2.* Concordance between US findings and subjective symptoms of patients separated by the Steinbrocker stage. |
| Joints | Stage I |  | Stage II |  | Stage III |  | Stage IV |
|  n† | PABAK |  |  n† | PABAK |  |  n† | PABAK |  |  n† | PABAK |
| MCP1 Right | 136 | 0.735 |  | 114 | 0.596 |  | 81 | 0.654 |  | 155 | 0.497 |
|  Left | 137 | 0.781 |  | 114 | 0.649 |  | 81 | 0.605 |  | 155 | 0.561 |
| MCP2 Right | 136 | 0.559 |  | 114 | 0.386 |  | 81 | 0.284 |  | 154 | -0.026 |
|  Left | 137 | 0.577 |  | 113 | 0.575 |  | 80 | 0.375 |  | 153 | 0.268 |
| MCP3 Right | 136 | 0.779 |  | 114 | 0.579 |  | 81 | 0.407 |  | 155 | 0.329 |
|  Left | 137 | 0.883 |  | 114 | 0.737 |  | 80 | 0.550 |  | 154 | 0.377 |
| MCP4 Right | 136 | 0.897 |  | 114 | 0.719 |  | 81 | 0.556 |  | 154 | 0.481 |
|  Left | 137 | 0.912 |  | 114 | 0.702 |  | 80 | 0.675 |  | 155 | 0.587 |
| MCP5 Right | 136 | 0.853 |  | 114 | 0.614 |  | 80 | 0.650 |  | 156 | 0.538 |
|  Left | 137 | 0.883 |  | 114 | 0.772 |  | 80 | 0.625 |  | 155 | 0.600 |
| IP1 Right | 136 | 0.794 |  | 114 | 0.737 |  | 81 | 0.605 |  | 155 | 0.613 |
|  Left | 137 | 0.839 |  | 114 | 0.807 |  | 81 | 0.654 |  | 154 | 0.623 |
| PIP2 Right | 136 | 0.765 |  | 114 | 0.737 |  | 81 | 0.556 |  | 153 | 0.673 |
|  Left | 137 | 0.766 |  | 114 | 0.789 |  | 81 | 0.704 |  | 153 | 0.686 |
| PIP3 Right | 136 | 0.735 |  | 114 | 0.649 |  | 81 | 0.580 |  | 150 | 0.600 |
|  Left | 137 | 0.796 |  | 114 | 0.772 |  | 80 | 0.675 |  | 152 | 0.724 |
| PIP4 Right | 136 | 0.779 |  | 114 | 0.684 |  | 80 | 0.675 |  | 148 | 0.716 |
|  Left | 137 | 0.810 |  | 114 | 0.772 |  | 80 | 0.675 |  | 152 | 0.763 |
| PIP5 Right | 136 | 0.809 |  | 114 | 0.789 |  | 81 | 0.753 |  | 150 | 0.707 |
|  Left | 137 | 0.854 |  | 114 | 0.807 |  | 80 | 0.775 |  | 151 | 0.788 |
| Wrist Right | 136 | 0.074 |  | 113 | -0.009 |  | 81 | 0.012 |  | 155 | -0.058 |
|  Left | 137 | 0.022 |  | 113 | -0.115 |  | 81 | -0.062 |  | 154 | -0.117 |
| †Joints with deficits in US data were excluded. US: ultrasound; PABAK: prevalence-adjusted bias-adjusted kappa; MCP: metacarpophalangeal; (P)IP: (proximal) interphalangeal. |

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| *Supplementary table 3.* Concordance between US findings and subjective symptoms of patients separated by anxiety and depression. |
| Joints |  Anxiety† |  |  Depression† |
|  Present† |  |  Absent† |  |  Present† |  |  Absent† |
|  n‡ | PABAK |  |  n‡ | PABAK |  |  n‡ | PABAK |  |  n‡ | PABAK |
| MCP1 Right | 102 | 0.627 |  | 382 | 0.607 |  | 129 | 0.597 |  | 356 | 0.618 |
|  Left | 101 | 0.683 |  | 384 | 0.641 |  | 129 | 0.643 |  | 357 | 0.653 |
| MCP2 Right | 102 | 0.333 |  | 381 | 0.270 |  | 129 | 0.318 |  | 355 | 0.273 |
|  Left | 99 | 0.475 |  | 382 | 0.435 |  | 127 | 0.465 |  | 355 | 0.437 |
| MCP3 Right | 103 | 0.476 |  | 381 | 0.538 |  | 129 | 0.628 |  | 356 | 0.489 |
|  Left | 101 | 0.644 |  | 382 | 0.628 |  | 129 | 0.581 |  | 355 | 0.651 |
| MCP4 Right | 103 | 0.573 |  | 380 | 0.689 |  | 129 | 0.674 |  | 355 | 0.662 |
|  Left | 101 | 0.743 |  | 383 | 0.713 |  | 129 | 0.674 |  | 356 | 0.736 |
| MCP5 Right | 102 | 0.529 |  | 382 | 0.696 |  | 128 | 0.609 |  | 357 | 0.681 |
|  Left | 101 | 0.644 |  | 383 | 0.744 |  | 129 | 0.721 |  | 356 | 0.725 |
| IP1 Right | 103 | 0.650 |  | 381 | 0.701 |  | 130 | 0.692 |  | 355 | 0.690 |
|  Left | 101 | 0.703 |  | 383 | 0.744 |  | 129 | 0.690 |  | 356 | 0.753 |
| PIP2 Right | 101 | 0.564 |  | 381 | 0.732 |  | 129 | 0.705 |  | 354 | 0.695 |
|  Left | 100 | 0.660 |  | 383 | 0.755 |  | 128 | 0.813 |  | 356 | 0.708 |
| PIP3 Right | 101 | 0.624 |  | 378 | 0.656 |  | 126 | 0.619 |  | 354 | 0.661 |
|  Left | 99 | 0.616 |  | 382 | 0.780 |  | 127 | 0.701 |  | 355 | 0.763 |
| PIP4 Right | 98 | 0.633 |  | 378 | 0.741 |  | 124 | 0.774 |  | 353 | 0.700 |
|  Left | 99 | 0.677 |  | 382 | 0.785 |  | 127 | 0.669 |  | 355 | 0.797 |
| PIP5 Right | 100 | 0.660 |  | 379 | 0.789 |  | 126 | 0.794 |  | 354 | 0.751 |
|  Left | 99 | 0.697 |  | 381 | 0.837 |  | 127 | 0.795 |  | 354 | 0.814 |
| Wrist Right | 101 | 0.030 |  | 382 | 0.000 |  | 129 | -0.008 |  | 355 | 0.008 |
|  Left | 101 | -0.010 |  | 382 | -0.079 |  | 129 | -0.085 |  | 355 | -0.059 |
| †Anxiety and depression were evaluated by the Hospital Anxiety and Depression Scale (HADS-A / HADS-D). Anxiety present: HADS-A ≥ 8; Anxiety absent: HADS-A < 8; Depression present: HADS-D ≥ 8; Depression absent: HADS-D < 8. ‡Joints with deficits in US data were excluded. US: ultrasound; PABAK: prevalence-adjusted bias-adjusted kappa; MCP: metacarpophalangeal; (P)IP: (proximal) interphalangeal. |