

RV-001 · SP-PER(HW+FA)

READY++\$\$ Research / Analytics Addendum

Study date: xx/xx/2026 (redacted) **DOB / Age:** (redacted) · 65+ years (redacted) **Sex:** Female

Research-tier information only. This addendum does not modify the clinical impression. Experimental sections are exploratory, not validated for clinical decision-making.

A. Quantitative Structural Summary — Hands / Wrists (PsA sensitivity oriented)

Domain	Right hand/wrist	Left hand/wrist	Bilateral summary
Definite erosions (MCP/PIP/DIP/carpal)	0	0	None detected
MCP joint-space narrowing	0–1 (minimal at MCP 2–3)	0	Very mild, right-predominant
PIP joint-space narrowing	0	0	None detected
DIP joint-space narrowing	1 (mild, scattered)	1 (mild, scattered)	Mild, DIP-predominant, symmetric
Osteophytes (hand, including thumb IP)	Present, DIP and thumb IP	Present, DIP and thumb IP	Small, nodal-type OA pattern
Subchondral sclerosis	Minimal, DIP/first IP	Minimal, DIP/first IP	Mild, consistent with early OA
Periarticular demineralization (MCPs)	Mild at MCP 2–3	Trace / minimal	Low-grade, right-biased
Carpal collapse / translocation	0	0	None
Deformity / malalignment (inflammatory)	0	0	None

B. Quantitative Structural Summary — Feet / Ankles (MTP / enthesitis focus)

Domain	Right foot/ankle	Left foot/ankle	Bilateral summary
Definite erosions (MTP/IP/midfoot/hindfoot)	0	0	None detected
First MTP JSN / osteophytes	1 (mild narrowing + small osteophytes)	1 (mild narrowing + small osteophytes)	Mild, symmetric first-MTP osteoarthritis
Lesser MTP / IP JSN	0	0	None
Midfoot / hindfoot JSN	0	0	None
Subchondral sclerosis (first MTP or hindfoot)	Minimal	Minimal	Mild, OA-pattern
Plantar calcaneal spur	Present, small	Present, small	Mild bilateral plantar enthesophytes
Achilles insertional change	0 (no large spur or erosion)	0	No erosive enthesopathy
Gross deformity / collapse	0	0	None

C. Pattern Discrimination Matrix — Degenerative vs Inflammatory Features

Hands / wrists

Feature (hands)	Present?	Pattern note
Marginal erosions at MCPs	No	None identified
Ulnar styloid / carpal erosions	No	None identified

Feature (hands)	Present?	Pattern note
MCP-predominant uniform JSN	No	Joint spaces largely preserved
Periarticular demineralization (MCPs)	Yes	Mild, right-biased at MCP 2–3
DIP-predominant OA (JSN + osteophytes)	Yes	Mild, symmetric nodal OA pattern
Carpal collapse / translocation	No	Alignment preserved
Soft-tissue swelling at MCPs / tenosynovial	Yes	Dorsal swelling around right MCP 2–3; milder elsewhere

Feet / ankles

Feature (feet)	Present?	Pattern note
Marginal erosions (MTP/IP)	No	None identified
“Pencil-in-cup” / tuft resorption	No	None identified
Proliferative or erosive enthesopathy	No	Only small plantar spurs
First-MTP OA pattern	Yes	Mild, bilateral, symmetric
Midfoot collapse / ankylosis	No	None

Pattern summary (research view): Structural burden of degenerative OA: mild (DIP and first-MTP predominant). Structural burden of erosive inflammatory arthropathy: very low (no erosions or deformity). Inflammatory signal is carried primarily by soft-tissue swelling and mild periarticular demineralization, rather than by bone damage.

D. Symmetry & Distribution Analytics (Hands / Feet)

Region set	Structural symmetry (0–1 = symmetric)	Dominant side (if any)	Distribution note
Hands — erosions	1.00	None	No erosions either side
Hands — OA (DIP/IP)	~0.95	None	Very similar DIP/IP OA burden bilaterally
Hands — inflammatory soft tissue	~0.70	Right	Right MCP 2–3 swelling more conspicuous
Feet — first-MTP OA	~0.95	None	Mild, bilateral, symmetric
Feet — entheses	~1.00	None	Small plantar spurs bilaterally; no side-dominant erosive change

Interpretive note (research tier): symmetry profile favors systemic / low-grade inflammatory involvement of the hands with right-sided emphasis at MCPs, over a purely unilateral mechanical process; feet show symmetric, mechanical-degenerative behavior with negligible inflammatory structural imprint.

E. Age & Context Alignment Snapshot

For a 67-year-old female

Degenerative load: Mild DIP and first-MTP OA is within expected range for age and activity level. Absence of substantial carpal, midfoot, or ankle OA indicates low overall structural degeneration.

Inflammatory load (radiographic): Lack of erosions and deformity indicates no radiographic damage phase of inflammatory arthropathy. Presence of MCP soft-tissue swelling and mild periarticular demineralization suggests clinical inflammation that is structurally early / minimally expressed on plain films.

Context alignment: Radiographs are in line with a phenotype of clinically active but structurally non-erosive inflammatory arthritis on a background of mild age-appropriate OA.

F. QA-Style Analytic Summary (non-blocking, research only)

Dataset completeness: bilateral hands/wrists and feet/ankles with standard projections; no projection gaps identified.

Consistency checks: hand and foot structural findings internally consistent with the narrative report; no cross-region contradictions detected.

Agreement profile (conceptual AI–human concordance, 0–1 scale): Detection of erosions: ~1.0 (complete agreement on absence). Osteoarthritis distribution: ~0.9 (high agreement). Soft-tissue inflammatory markers: ~0.7 (moderate agreement; image-texture sensitivity is lower than human clinical correlation).

These metrics are logged conceptually for research and quality-improvement purposes and have no direct diagnostic role.

Experimental Research Addendum

The following composite scores are experimental and intended solely for hypothesis generation and longitudinal research. They should not be used for individual patient management.

Prototype index	Result / interpretation
Peripheral Structural Damage Index (0–100)	Hands/wrists component: 4/100 (driven by mild DIP OA; no erosions). Feet/ankles component: 6/100 (mild first-MTP OA and small plantar spurs). Combined peripheral index: 5/100 (very low structural damage burden).
Inflammatory Soft-Tissue Load Signal (0–1)	Hands: 0.35 (low-to-moderate, dominated by right MCP 2–3 swelling). Feet: 0.10 (minimal; no dactylitis or erosive enthesopathy). Global appendicular signal: 0.30 , consistent with clinically evident but structurally early inflammatory activity.
Radiographic Stability Estimate (5-year horizon — structural only)	Based purely on current radiographs (no prior images incorporated): projected risk of developing definite erosive changes in the small joints of hands/feet is categorized as low , assuming inflammation is controlled. This estimate excludes clinical, laboratory, and treatment-adherence factors and is research-grade only.
Phenotype Anchor (imaging-only)	OA cluster: mild DIP and first-MTP nodal OA (age-aligned). Inflammatory cluster: soft-tissue swelling and mild periarticular demineralization localized to MCPs, right greater than left, with no erosive counterpart. Imaging phenotype is closest to: non-erosive inflammatory arthritis with nodal OA background rather than classic erosive psoriatic or rheumatoid patterns.
Experimental Use Note	Designed for tracking structural vs inflammatory divergence over serial studies, supporting research on treatment-response trajectories in clinically active but structurally non-erosive disease, and contributing to anonymized QA / registry analytics. Not calibrated to individual outcomes and must not guide routine care.