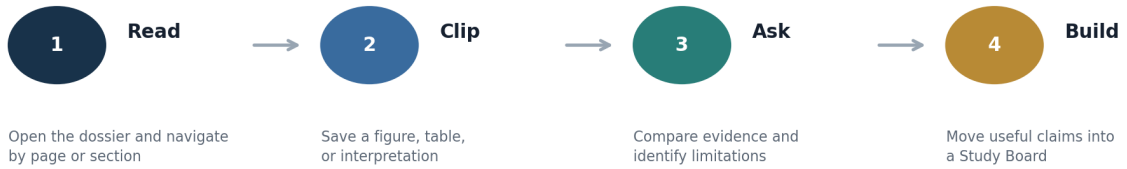
BOOKVAULT DEMO DOSSIER

Load, Sleep, and Recovery Under Uncertainty

A fictional multi-modal research dossier designed to demonstrate reading, clipping, evidence extraction, visual reasoning, and study-board workflows.

Research problem	Do symptom improvements after progressive loading reflect the program itself, better sleep, adherence, expectations, or a mixture of all four?
Study design	Simulated 12-week pragmatic cohort with three management pathways, synthetic imaging panels, patient-reported outcomes, and interview excerpts.
Demo challenge	The document contains group-level improvements, individual non-response, imaging-symptom disagreement, missing-data concerns, and causal ambiguity.

How to use this demo dossier inside BookVault



IMPORTANT NOTE

Every number, image, quote, and conclusion in this dossier is fictional and created for product demonstration. It must not be used for clinical decisions, research claims, or patient care.

Suggested BookVault demo prompts

Reader question	What changed most between week 0 and week 12, and which result is least certain?
Evidence question	Clip Figure 2 and explain why sleep improvement cannot be treated as the sole mechanism of pain improvement.
Study Board task	Create claims, supporting evidence, caveats, and unanswered questions from pages 4-8.

1. Research map and questions

This dossier follows a fictional implementation study named the RECOVER-12 project. It evaluates whether a load-management pathway that also includes sleep support is associated with better recovery than usual care or progressive loading alone.

The key analytical trap is deliberate: the data were designed so that an apparently persuasive group mean can coexist with uncertain mechanisms, subgroup variation, and incomplete follow-up.

Primary question	Among participants with persistent Achilles-region pain, which pathway is associated with the largest improvement in self-reported pain by week 12?
Mechanism question	Does improvement in sleep plausibly explain the outcome, or is it partly a marker of adherence, expectation, reduced stress, or regression toward the mean?
Translation question	Do changes on synthetic imaging track clinical recovery closely enough to guide management by themselves?
Evidence challenge	What can be claimed from the dataset, what cannot be claimed, and what additional information would reduce uncertainty?

Decision logic

Observed outcome	Pain and function improved more in the combined pathway.	Do not overstate: association does not prove the sleep component caused the difference.
Individual data	A large minority did not reach the responder threshold.	Do not overstate: the group average does not describe every participant.
Imaging change	Pseudo-Doppler signal decreased across panels.	Do not overstate: structural proxy improvement does not establish tissue healing as the cause of symptom change.

BOOKVAULT CLIP TARGET

Clip the decision-logic table. It is a useful test of whether the AI can preserve a finding and its caveat together rather than turning a cautious association into a definitive treatment claim.

2. Simulated protocol and dataset structure

RECOVER-12 is a simulated pragmatic cohort. Participants were not perfectly randomized in the real-world sense: pathway allocation occurred through clinic availability and participant preference. This makes the dataset intentionally suitable for discussing selection bias and confounding.

Domain	Description	Reason it matters
Participants	54 adults, persistent Achilles-region pain greater than 12 weeks; synthetic baseline characteristics shown below.	Small samples and heterogeneous presentations make estimates unstable.
Pathways	Usual care; progressive loading; progressive loading plus structured sleep support.	The combined pathway may differ in attention, expectancy, and adherence as well as content.
Outcomes	Pain NRS, VISA-A-like function score, patient-specific task score, sleep duration, adverse events, attendance.	Multiple outcomes can improve for different reasons.
Imaging proxy	Synthetic ultrasound-like panels at baseline, week 6, and week 12.	Visual change can be compelling while still being clinically non-specific.
Qualitative data	Twelve fictionalized interview excerpts, coded for confidence, fear, schedule pressure, and perceived recovery.	Narratives can contextualize adherence but do not prove a biological mechanism.

Baseline balance snapshot

Variable	Usual care (n=18)	Progressive loading (n=18)	Load + sleep (n=18)
Age, mean (SD)	44.2 (10.1)	43.5 (9.4)	45.1 (11.3)
Baseline pain, 0-10	6.2 (1.1)	6.0 (1.0)	6.1 (1.2)
Baseline sleep, h/night	6.1 (0.8)	6.4 (0.9)	5.8 (1.0)
Prior episode, %	39%	44%	50%
Night-shift work, %	17%	22%	39%
High recovery expectation, %	33%	44%	61%

REASONING CUE

Notice the higher night-shift work and recovery expectation values in the combined pathway. A simple comparison of outcomes might attribute everything to treatment content, even though these baseline differences could influence sleep, adherence, and perceived change.

3. Primary outcomes: strong group signal, incomplete individual story

The combined load plus sleep pathway shows the largest mean symptom improvement by week 12. However, the response figure also shows non-responders in every pathway. A careful interpretation needs both panels.

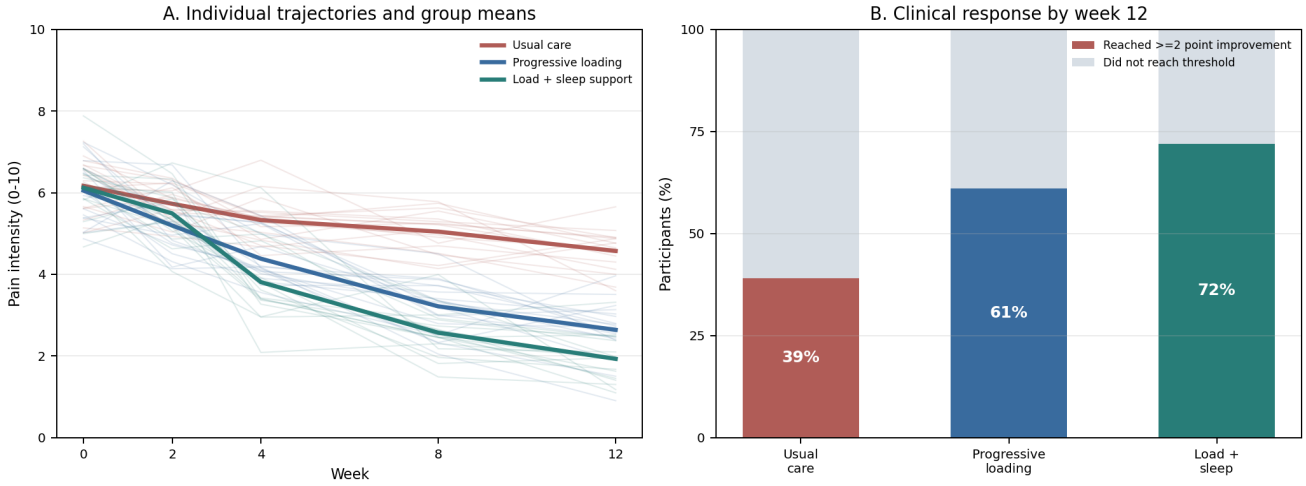


Figure 1. Synthetic trajectories. Panel A shows individual lines behind group means. Panel B applies a responder threshold of at least 2 points improvement on a 0-10 pain scale. The visual strength of the combined-pathway result should be balanced against small sample size, pathway-selection bias, and an incomplete causal model.

Outcome at week 12	Usual care	Progressive loading	Load + sleep
Mean pain change (95% simulation interval)	-1.5 (-2.2 to -0.8)	-3.2 (-4.1 to -2.3)	-4.2 (-5.1 to -3.3)
Function score change	+7.8	+15.6	+20.4
Reached pain responder threshold	39%	61%	72%
Any minor adverse event	17%	22%	28%
Completed >=80% sessions	61%	72%	83%

CLAIM BOUNDARY

The dataset supports: the combined pathway was associated with greater average improvement. It does not support: sleep support alone caused recovery, every individual benefited, or imaging changes were necessary for improvement.

4. Sleep, adherence, expectation, and the causal-overreach trap

A visually persuasive relationship appears between better sleep and greater symptom improvement. But the diagram identifies competing explanations: sleep may affect recovery, recovery may improve sleep, or both may be influenced by adherence, schedule flexibility, expectation, or unmeasured stress.

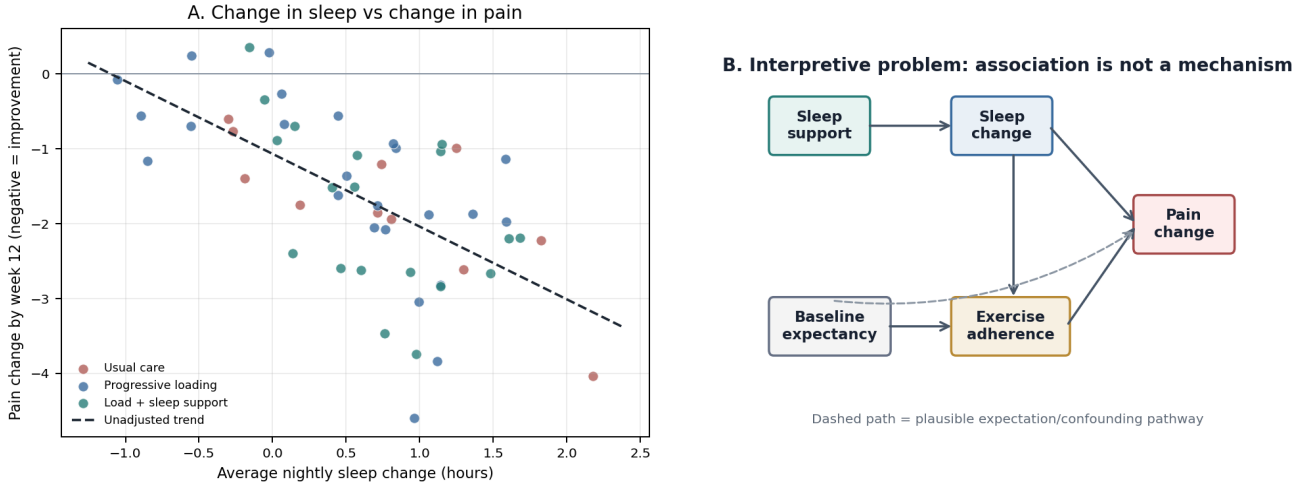


Figure 2. Panel A is an unadjusted synthetic association. Panel B maps plausible causal pathways. The scatterplot should be treated as a prompt for further analysis, not a proof of mechanism.

Possible interpretation	Status	What would improve confidence?
Sleep support directly improved pain recovery.	Plausible but unproven.	Pre-specified mediation analysis, better baseline stress data, and a randomized component.
Better sleep was a marker of higher adherence.	Also plausible.	Time-varying attendance and loading data plus adjusted models.
Improving pain made sleep easier.	Likely contributes.	Repeated measures that establish temporal ordering.
Expectancy or clinic contact created some difference.	Cannot be excluded.	Attention-matched comparator and blinded expectation assessment.

BOOKVAULT AI TEST

Ask: "Write a two-sentence conclusion that preserves the result but does not claim causation." A strong answer should say "associated with" and name at least one competing explanation.

5. Imaging is evidence, not a verdict

The synthetic imaging panels are deliberately designed to show a familiar tension: a visible imaging proxy improves over time, but the relationship to symptoms is incomplete. This gives the demo a non-textual reasoning task: identify what is shown, what changed, and what cannot be inferred.

Figure 3. Synthetic imaging panels: a structural signal may not track symptom change one-for-one

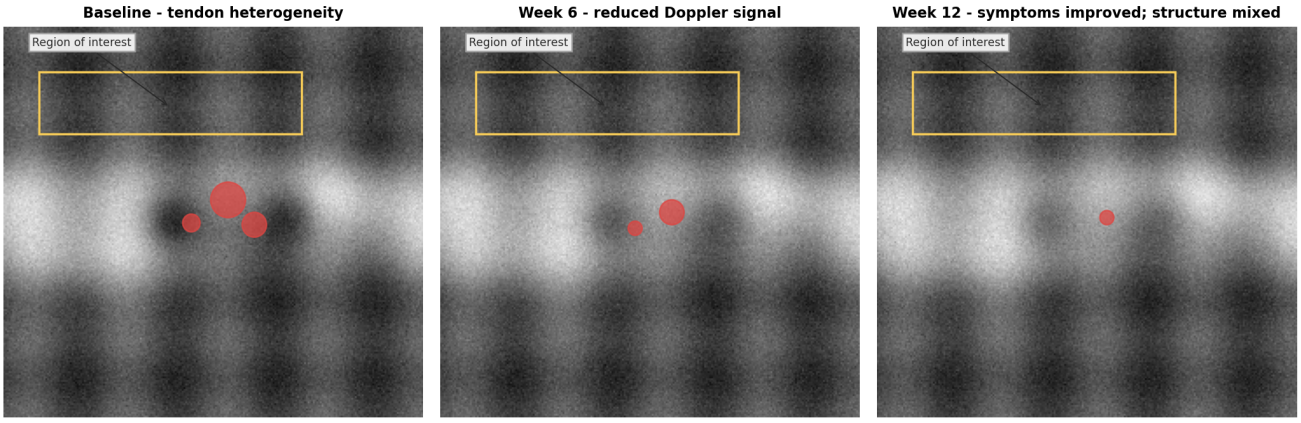


Figure 3. Artificial ultrasound-like panels generated only for this demo. Red circles represent pseudo-Doppler signal; the yellow rectangle marks a region of interest. The week-12 image can be described as different from baseline, but not as proof of tissue normalization, symptom mechanism, or treatment necessity.

What the image can support	What the image cannot support alone
A visual proxy in the marked region changed across the three time points.	That a structural change caused symptom improvement.
The region was selected and monitored repeatedly.	That the proxy measures function, capacity, or readiness to return to all activities.
The reader can compare locations, signal size, and timing.	That all participants would show the same pattern or that images should override reported symptoms.

SUGGESTED EVIDENCE CLIP

Clip the baseline and week-12 panels together. Ask the AI to create a caption that separates observed image change from a clinical interpretation.

6. Interview excerpts: explanation, not confirmation

Twelve fictionalized participants completed brief exit interviews. Their comments add context around loading, sleep, fear, and recovery expectations. They are useful for hypothesis generation and implementation insight but cannot validate a causal pathway on their own.

Participant 08 - combined pathway

> “When I slept better, I was less worried about waking up sore. That made it easier to follow the plan instead of skipping sessions.”

Participant 17 - progressive loading

> “The exercises were fine, but I was doing rotating shifts. My schedule changed every week, so I could not keep the same routine.”

Participant 31 - usual care

> “I felt temporarily better after appointments, but I did not know what level of soreness was safe, so I often did less than I could.”

Participant 46 - combined pathway

> “The sleep plan did not fix everything. The main difference was having a smaller target each day that I believed I could complete.”

Theme	Signals in excerpts	Risk of over-interpretation
Confidence and pacing	Participants described clearer thresholds and smaller targets.	Do not assume confidence was the active ingredient without comparative testing.
Schedule instability	Shift work and caregiving disrupted routine.	Do not treat schedule as a purely personal adherence problem.
Symptom uncertainty	Participants wanted a framework for interpreting soreness.	Do not interpret reduced fear as proof of structural recovery.

REASONING CUE

The final quote is intentionally ambiguous: it could support the value of sleep, self-efficacy, smaller targets, therapeutic alliance, or all of them. A good analysis should preserve that ambiguity.

7. Evidence synthesis: claims, supports, caveats, next questions

This page is designed for BookVault evidence clipping and Study Board extraction. Each row represents a research claim that must stay attached to its evidence source and limitation.

Candidate claim	Supporting material	Caveat / competing explanation	Next question
The combined pathway had the largest average improvement by week 12.	Figure 1 and outcome table: -4.2 mean pain change; 72% responders.	Allocation was influenced by availability and preference; baseline expectancy differed.	Would results remain after adjustment or random allocation?
Sleep change tracked with symptom improvement.	Figure 2A: unadjusted downward trend.	Directionality and confounding are unresolved.	Does sleep change precede pain change within individuals?
Attendance may be one pathway through which outcomes improved.	Completion rate was highest in combined pathway; interview excerpts mention routine.	Attendance can reflect motivation, schedule, or symptom severity.	Which intervention elements improve adherence without adding unnecessary burden?
Imaging proxy changed over time.	Figure 3: fewer/smaller pseudo-Doppler markers.	Synthetic proxy is not a clinical outcome and cannot establish mechanism.	Would change in proxy correlate with function at individual level?

What a strong BookVault output looks like

Good summary	Names the combined pathway as associated with larger mean improvement, mentions responder variation, and states that the data do not establish the specific causal role of sleep.
Weak summary	“Sleep support healed the tendon and proved more effective.” This replaces association with causation and incorrectly treats a visual proxy as proof of healing.
Good evidence card	Links a claim to a figure or table, records the page, preserves a caveat, and adds a next question.

Appendix A. Selected synthetic participant rows

These abbreviated records exist so the demo can test extraction across prose, figures, tables, and raw-data-style information. Values are fictional and intentionally include missingness.

ID	Arm	Base NRS	W12 NRS	Sleep dH	Attend %	Note
R01	Usual	6.0	4.0	0.0	67	manual work
R04	Usual	7.0	7.0	-0.2	44	night shifts
R07	Load	5.0	2.0	0.2	83	high expectation
R12	Load	6.0	4.0	0.4	72	caregiver
R16	Load	7.0	3.0	0.9	89	minor flare
R20	Load+Sleep	6.0	1.0	1.1	94	better routine
R25	Load+Sleep	5.0	4.0	0.3	78	travel week
R29	Load+Sleep	7.0	2.0	1.5	100	good adherence
R34	Usual	6.0	5.0	-0.1	61	missed reviews
R38	Load	8.0	3.0	0.5	78	flare at W4
R42	Load+Sleep	6.0	1.0	1.2	89	shift change
R49	Load+Sleep	5.0		0.8	56	lost follow-up

Data questions to ask

- Which rows contradict the idea that more sleep change always predicts better outcome?
- Which rows make missing data or loss to follow-up an interpretive issue?
- Can attendance be treated as a mediator, a confounder, an outcome, or more than one depending on the question?
- Which participant notes could explain apparent outcome variation without proving causality?

SUGGESTED CLIP

Clip rows R20, R25, R29, and R49. They are a useful compact test of whether the AI distinguishes correlation, adherence, missingness, and individual variability.

Appendix B. Public demo workflow guide

Use this page as the visible guide for visitors. It makes the BookVault workflow concrete without requiring them to upload private material during a public preview.

Step	Do this	What to look for
1. Open the reader	Go to page 4. Compare the average result with the individual trajectories.	You should notice a stronger group result and persistent non-response.
2. Save a visual clip	Clip Figure 2 or Figure 3. Give it a title that names what is observed.	Avoid conclusions such as “proved” or “healed”.
3. Ask an AI question	Ask for a cautious summary of the combined pathway.	The answer should use “associated with” and mention uncertainty.
4. Build a Study Board	Create a Claim, Evidence, Caveat, and Next Question card from page 8.	A strong board keeps claims connected to their source and limitation.
5. Start private trial	Upload your own documents after you understand the workflow.	Private trials can later include limited document storage and AI credits.

IDEAL PUBLIC-PREVIEW SETUP

Load this dossier as a fixed read-only BookVault library item. Let visitors open pages, view prepared clips, and see prewritten AI outputs. Keep uploads, personal storage, and live AI calls behind the verified trial account.

End of demo dossier.