Episode Book

EPISODE #6155

Acupuncture, Adenosine, and the Sham Needle Problem

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SYNOPSIS

Acupuncture works better than no treatment for chronic pain — but only slightly better than fake needling, and the gap is small enough that researchers still argue about what it means. This episode digs into the Vickers individual patient data analysis of 39 trials and 20,000+ patients, the Cochrane review's more cautious read on low back pain, and why sham design is the hardest problem in the field. Along the way: adenosine, ATP, fibroblasts, deqi, and the difference between "it helped" and "the needle's distinctive ingredient helped." No qi required, but no contempt for relief either.

TRANSCRIPT



Corn

I find the useful needle more interesting than the mystical one.



Corn

Hannah sent us a prompt about Chinese medicine that starts from a very recognizable tension. She comes from a scientific family, has little patience for homeopathy or crystal healing, but years of acupuncture make the idea that absolutely nothing is happening difficult to accept. She doesn't need qi to be literal for a treatment to have helped.



Herman

A technique can outlive the explanation somebody attached to it. People could observe that a particular intervention changed pain without knowing what a spinal pain pathway was.



Corn

Her question is how seriously to take that possibility. Does acupuncture have a real effect that's awkward to separate from the treatment ritual? Can old herbal knowledge contain useful discoveries without validating an entire medical philosophy? Then there's energy healing, where the word energy seems to move between metaphor and physics without stopping at customs.



Herman

The history matters too. Who got to preserve observations, who got to call themselves a physician, and whose knowledge never entered the books?



Corn

None of that requires choosing between believing every traditional claim and assuming our ancestors never noticed anything. The needles are a good place to begin, because the comparison treatment can itself do something.



Herman

I'm Herman Poppleberry, and the distinction I'd make immediately is between getting better after treatment and getting better because of the treatment's distinctive ingredient. Those are different claims. For acupuncture, the distinctive ingredient might be skin penetration, depth, manipulation, location, or some combination. A relaxing appointment also has ingredients.



Corn

An hour of uninterrupted attention is practically experimental medicine.



Herman

Pain especially responds to context. Expectations, attention, anxiety, movement, sleep, and what someone thinks an uncomfortable sensation means can change the experience. That doesn't make pain imaginary. Those processes are part of how pain is generated and regulated.



Corn

I suspect people hear placebo and imagine being caught pretending. If your headache improves, the improvement isn't fraudulent just because the explanation on the brochure was.



Herman

Nor does improvement prove the brochure. We need to keep efficacy, mechanism, and historical persistence separate. A treatment could beat a control without using qi. It could have a plausible biological mechanism yet produce too little benefit to matter. It could survive for centuries because people value the encounter, not because it changes the disease.



Corn

Herman, you're about to become excessively fond of a beautifully named molecule.



Herman

Adenosine is waiting patiently. I can wait with it.



Corn

You say that as though it hasn't already been invited to dinner.



Herman

Would you actually care whether the needle went into a traditional point, Corn, if your pain improved?



Corn

Personally, perhaps not. Publicly, very much. If somebody sells expertise in an exact map of the body, I'd like to know whether the map earns its keep. Otherwise I'm paying for navigation when the driver is circling the block.



Herman

That distinction matters clinically too. If location contributes nothing, training and treatment claims should change. If it contributes something, we should establish where, for which condition, and how much. Chronic headache doesn't automatically tell us about infertility, asthma, or cancer.



Corn

That's the part I'd defend against both camps. Someone's genuine relief deserves an explanation. It doesn't deserve being recruited into every other claim made under the same shop sign.



Herman

The strongest broad acupuncture evidence concerns chronic pain. The Vickers individual patient data analysis combined thirty-nine trials involving more than twenty thousand people. It covered back and neck pain, osteoarthritis, chronic headache, and shoulder pain. Acupuncture performed better than both sham acupuncture and controls without



Herman (continued)

acupuncture.



Corn

Individual patient data means they went beneath each paper's headline and compared the actual participant records?



Herman

Yes, with agreed eligibility and quality requirements. That gives more consistent analyses than merely collecting whatever summary each paper chose to publish. The advantage over no acupuncture was around half a standard deviation. Over sham, around a fifth.



Corn

A fifth of a standard deviation is not a fifth of your pain disappearing.



Herman

Correct. It's a standardized difference between groups. The comparison against no acupuncture was moderate on that scale. The extra benefit against sham was small. Statistical confidence in a difference doesn't automatically make that difference large enough for an individual to notice.



Corn

Yet the whole appointment can still be worth something to the person having it. I wouldn't want a doctor saying, well, we have subtracted the comfortable room, the expectation, and the sympathetic practitioner, and unfortunately you've enjoyed those incorrectly.



Herman

I wouldn't either. The practical comparison and the explanatory comparison answer different questions. Whether offering the whole package helps is one question. Whether exact traditional needling adds benefit is another. The pooled effects also persisted, with roughly fifteen percent attenuation after a year. That argues against dismissing everything



Herman (continued)

as a fleeting sensation during the session.



Corn

It still doesn't tell us which part lasted.



Herman

No. Follow-up preserves the result, not an explanation for it. Also, those broad averages shouldn't flatten disagreement. Cochrane's review of chronic nonspecific low back pain was more cautious, particularly about whether differences against sham were clinically important. Review conclusions can differ with eligible trials, comparisons, outcome timing, and thresholds for meaningful improvement.



Corn

The disagreement sounds less like needles either work or don't, and more like people answering slightly different questions while holding the same newspaper headline.



Herman

Sometimes. There are genuine quality concerns too. Small trials, imperfect blinding, selective reporting. A huge overview doesn't dissolve those problems. The recent overview of non-drug low-back-pain treatments covered hundreds of trials, but that was a broad treatment landscape, not hundreds of independent endorsements of acupuncture.



Corn

A large filing cabinet can still contain small experiments.



Herman

Sham design is the central difficulty. A placebo capsule can closely resemble the active pill while omitting its drug. Even that isn't perfect if side effects reveal allocation. With acupuncture, superficial penetration, pressure from a retractable needle, and needling away from a traditional point are different physical interventions.



Corn

The pretend needle has been doing freelance physiology.



Herman

Skin and muscle have sensory nerves. Pressing, pricking, and manipulating tissue can change incoming signals. Sham procedures may engage pain-modulating pathways themselves. Comparing deeper traditional needling with shallow off-point needling changes depth and location together. A positive result can't tell you which difference mattered.



Corn

Then calling the control fake makes the result sound cleaner than it is. I could imagine shallow needling being helpful, with deeper needling adding a little. Equally, I could imagine both getting most of their apparent advantage from the appointment.



Herman

Both possibilities belong in the interpretation. There are also nonpenetrating shams, but those bring their own questions about credibility and sensory differences. Practitioners generally know what they're doing, so their behavior can vary even when patients don't know their allocation.

L

Larry

Have you ever sat quietly in a room and worried that your placebo was insufficiently shallow? Introducing the MeridiMatic Domestic Sham Calibration Pavilion. Simply erect its reassuring canvas walls around any ordinary chair, insert your household doubts into the velvet skepticism pouch, and our patented Depth of Conviction Dial will convert superficial uncertainty into deep premium reassurance. No needles required. Each pavilion contains seven hundred imaginary acupoints, individually inspected by a retired curtain measurer. For a limited period, receive the Companion Control Chair, which looks identical but has been placed in a less convincing corner. Compare your results with the enclosed chart, already completed for your convenience.

L

Larry

Order the Deluxe Pavilion and we'll include a certificate confirming that somebody has definitely felt something. Small print follows. Pavilion provides no calibration, medical treatment, meaningful blinding, or protection from drafts. Control chair sold without legs to preserve experimental separation. Imaginary acupoints may migrate during vacuuming. Results not transferable between rooms. Skepticism pouch must be emptied by an accredited upholsterer. Certificate cannot be redeemed for certainty.



Corn

Another front passing through.



Herman

At least this one was mostly canvas.



Herman

Location does appear to affect sham outcomes in some analyses. A network analysis found differences depending on whether sham involved the same points used in active treatment. That's interesting, but it doesn't cleanly prove the traditional map. Trials can differ in more ways than point selection.



Corn

I'd want depth, manipulation, time, and expectations matched before celebrating the map. Otherwise location gets credit for everything that traveled with it.



Herman

That's the ideal direction. I'm reluctant to claim nobody has ever performed a particular control anywhere. The safer conclusion is that the existing mixture of control designs hasn't settled acupoint specificity. A scoping exercise counted more than six hundred trials using sham or placebo procedures. We haven't lacked ingenuity in constructing controls. We've lacked an agreed interpretation of what each one subtracts.



Corn

Your control group needs its own control group.



Herman

Sometimes several. Now, the physiology ... no, first separate observing a biological change from proving that change causes clinical relief. A scan changing after needling isn't enough. Lots of experiences change brain activity.



Corn

Your adenosine dinner invitation has conditions.



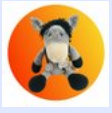
Herman

Stringent ones. Needling can activate local sensory pathways, alter pain signaling at spinal and higher levels, and involve endogenous opioids. There's also work on local tissue responses. Fibroblasts respond to mechanical deformation. Mechanical stimulation can release ATP, which can be broken down into adenosine, a molecule involved in signaling and pain modulation.



Corn

Those are ordinary biological materials responding to being poked. No new kind of energy required.



Herman

Right ... ordinary doesn't mean uninteresting. The question becomes whether those local changes account for the size, location, and duration of benefit in people. Some mechanistic findings come from animals or experimental settings. They don't automatically establish why a particular patient improved after a particular session.



Corn

I was about to accuse you of laundering a promising mechanism into a finished explanation.



Herman

You would have caught me if I'd said it explained everything. I'm saying there are credible routes worth testing, not a complete causal account.



Corn

Credit reluctantly entered.



Herman

The traditional deqi sensation, that heaviness or aching during manipulation, can also be investigated as a combination of tissue deformation, blood flow, and mediator release. A recognizable sensation needn't validate the theory traditionally used to describe it.



Corn

My guess is the most awkward result for purists would be a useful treatment that becomes less traditional every time we understand it better.



Herman

What would you retain from the original explanation?



Corn

Whatever survives testing. The names can remain culturally meaningful. They can't do the work of anatomical evidence. I'd happily preserve a historical map in a museum while asking the clinician to use a better one.



Herman

Herbs make that distinction especially concrete. Artemisinin is the outstanding example. Tu Youyou's work on sweet wormwood, Artemisia annua, drew on an ancient Chinese text. It led to an antimalarial drug and a Nobel Prize. Traditional knowledge helped direct a modern discovery.



Corn

Nobody needs to confiscate the credit because the final product came in a measured dose.



Herman

Her Nobel lecture explicitly called artemisinin a gift from traditional Chinese medicine. The historical clue mattered. The old text described preparation in a way that prompted reconsideration of heat. Low-temperature extraction helped produce an effective extract.



Corn

The preparation was part of the observation. Naming the plant wasn't the entire recipe.



Herman

Project five twenty-three screened hundreds of recipes and extracts. The successful work required extraction, isolation, testing, and further development. Artemisinin combination therapies became standard malaria treatments. That achievement supports searching traditional records for leads. It doesn't make every adjacent prescription effective.



Corn

A Nobel Prize has a surprisingly small blast radius.



Herman

Nor does it prove that all useful remedies must first become a single purified molecule. Standardized mixtures can be tested too. Identifying an active compound helps, but the decisive question is whether the actual preparation, dose, and indication have reliable



Herman (continued)

evidence.



Corn

That matters. Otherwise we'd set up the answer so a plant counts as superstition until a laboratory takes custody of it. A mixture could work. We'd still have to know which mixture we're discussing, and whether the next batch resembles the last.



Herman

Corn, how would you weigh generations of reports about the same herb?



Corn

As a promising lead, especially if the observation is specific. A preparation repeatedly helping a distinctive symptom is more informative than a tonic credited with improving everything. But I'd also ask what disappeared from memory. We inherit the success stories, not necessarily the untreated comparison group or the abandoned remedies.



Herman

That's a real problem with accumulated experience. Many illnesses fluctuate or resolve. People seek help near their worst point and then improve. A healer can accurately remember improvement while incorrectly assigning its cause.



Corn

Your own practice had the advantage that the patient sometimes told you the medicine hadn't worked.



Herman

Children were exceptionally clear about my failures. They were less interested in defending my professional theory.



Corn

A useful peer-review system.



Herman

Herbal evidence varies sharply by indication. A review of ginseng for erectile dysfunction found a trivial average effect against placebo, rather than the substantial benefit the marketing might suggest. That conclusion came from nine studies involving fewer than six hundred men. It doesn't settle every possible use of ginseng, but it answers that particular claim poorly for the seller.



Corn

An ancient reputation, a modest outcome.



Herman

Reviews of ginkgo for cognitive impairment and dementia haven't established the broad benefit people often expect. Evidence for traditional Chinese remedies in vascular dementia has also been insufficient. Meanwhile, reviews of Chinese medicines for diabetes and diabetic neuropathy sometimes report encouraging results.



Corn

Encouraging can cover a lot of unfinished business.



Herman

It can. One diabetes review claimed outcomes comparable to existing drugs, with fewer adverse effects. You have to inspect whether its underlying comparisons justify that confidence. Short follow-up, uncertain blinding, inconsistent preparations, and incomplete adverse-event reporting can all inflate the impression of success.



Corn

Especially the fewer adverse effects claim. Not writing down an adverse effect is an extremely efficient way to eliminate it.



Herman

Herbs are pharmacologically active or we wouldn't be interested in them. That means interactions, variable concentrations, contamination, and toxicity matter. Natural origin tells you where a substance came from, not how safely it behaves in a particular person.



Corn

Before you look at my leaves, ancestral leaf medicine remains outside your jurisdiction.



Herman

I was going to ask whether ancestral leaf medicine has a batch number.



Corn

It has a tree.



Herman

We'll begin with traceability, then.



Corn

Energy healing seems to make a different sort of claim from herbs. With a plant, we can at least agree that something physical enters the body. With a biofield, the thing under discussion changes whenever someone brings an instrument.



Herman

Bodies have measurable electrical activity and emit heat. Nobody disputes that. The unsupported step is claiming a distinct healing field that practitioners can detect or manipulate to produce clinical benefits. Calling it electromagnetic would create measurable expectations. Calling it subtle intention often removes those expectations again.



Corn

Energy with visiting hours for physics.



Herman

Emily Rosa tested a sharply defined claim. Therapeutic Touch practitioners said they could sense a human energy field with their hands. Behind a screen, without seeing which hand she approached, could they identify it? Twenty-one practitioners participated. They didn't demonstrate the claimed detection ability.



Corn

The screen matters because it removes the person's expression and movement. You're testing the sense they say they possess, rather than whether they can read a room.



Herman

She began that work as a child. The paper appeared in JAMA when she was eleven. Its force came from the simplicity of matching a test to the claim. It didn't settle every possible experience people call healing. It directly challenged a foundational ability these practitioners said they used.



Corn

A screen is a rather inexpensive rival to an invisible field.



Herman

Later clinical evidence hasn't rescued the claim. A rapid assessment found that most included Therapeutic Touch studies reported positive outcomes, but only four were judged at low risk of bias. No high-quality evidence established clinical benefit. Counting positive papers without examining their methods gives a very different impression.



Corn

What do you make of someone saying the energy is only a metaphor for presence? I could accept presence. Having somebody calm beside you can be valuable without a hidden force.



Herman

Then the claim should stay there. Comfort, focused attention, and relaxation are understandable experiences. If somebody starts claiming remote influence over disease, we've left metaphor. A preliminary distant-blessing trial doesn't turn intention into a demonstrated physical treatment.



Corn

There's also a historical trap here. Reject the field, and some people hear you rejecting the grandmother, the midwife, or an entire community's right to have known anything.



Herman

Who had permission to practice medicine often had more to do with education, status, and institutional power than demonstrated competence. Women provided childbirth care, nursing, household remedies, and counsel while formal learning was frequently closed to them.



Corn

The phrase unlicensed healer conceals a question about who controlled the licensing. A woman excluded from lectures didn't thereby become incapable of noticing that a preparation helped. Equally, exclusion didn't turn every observation into a correct one.



Herman

Witches, Midwives, and Nurses made that argument powerfully. It's an influential political history, though we shouldn't treat every part of its account as settled. The sweeping story that witch trials were simply male doctors eliminating knowledgeable midwives is too neat. Accusations, local conflicts, religious beliefs, and medical authority varied.



Corn

History deserves the same resistance to a universal cure.



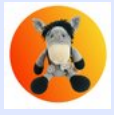
Herman

Herbal and childbirth knowledge could confer authority and attract suspicion. Both happened. Across cultures, healing roles also weren't uniformly female or male. Great Plains folk healing included many women and midwives. Malay midwives held recognized roles in care before and after birth. African traditions can combine plant remedies, spiritual practice, and social care.



Corn

Yoruba traditions around Osanyin, the deity associated with herbs, are a useful reminder that people didn't necessarily divide pharmacology, religion, and community obligations into our separate drawers.



Herman

Those descriptions tell us how healing was organized. They don't by themselves tell us which intervention altered disease. A socially important practice can contain an effective plant, an ineffective ritual, and valuable care in the same encounter.



Corn

I think the historical injustice creates an obligation to look carefully, not an obligation to believe. Otherwise we replace one status test with another. Previously, no credential meant no knowledge. Now, no credential would mean special access to truth.



Herman

Would you give greater weight to a remedy found independently in several cultures?



Corn

Some. It raises my interest, particularly if preparation and use match closely. But independent traditions can also converge on massage, warmth, attention, or impressive explanations because humans share bodies and anxieties. Persistence can preserve effective observations and appealing mistakes together.



Herman

Long experience is especially good at noticing immediate, dramatic effects. It's less reliable for prevention, slowly developing disease, rare harms, or outcomes heavily affected by natural recovery. Controlled comparison adds information human memory isn't built to collect.



Corn

A thousand years without a comparison can still leave the comparison unanswered.



Herman

We should also allow traditions to contain disagreements and revisions. Calling Chinese medicine thousands of years old can make a changing collection of practices sound like a single unchanged prescription. What was actually used, by whom, and for what complaint matters more than the age on the sign.



Corn

The minutes of that argument would be worth reading.



Hilbert

Minutes is too generous a word, Corn. Ours were called the proceedings because nobody would admit a meeting had occurred. The Botanical Relief and District Fellowship met above a pie shop. I joined because I was preparing herbal dispensary orders in those



Hilbert (continued)

days, and the secretary said membership included supper. It included a description of supper. The food required a separate vote.



Herman

An unfortunate distinction to discover after joining.



Hilbert

It was nineteen seventy-four. Mr. Bellamy ran the dispensary. He measured everything twice and refused to label anything a miracle because miracles complicated the returns book. We had this same argument about old remedies and modern explanations. Then the fellowship became occupied with whether its ceremonial goat counted as a founding member.



Corn

Founding membership sounds difficult to revoke.



Hilbert

It had eaten the original constitution. Mrs. Pike said that made it the only member to have absorbed the whole document. Mr. Vale said consumption did not imply consent. The dispute had already lasted eleven years. Nobody could find out how old the goat was because the birthday committee recognized only dates on which a quorum had seen it born.



Herman

They needed a rule about evidence before they needed a membership rule.



Hilbert

They had a rule. Evidence had to fit in the green box. The goat didn't. Herman, you were careful about keeping depth and location separate earlier. Mr. Vale would have liked that. He insisted the goat was not present at meetings because its body stood on the landing,



Hilbert (continued)

although its head regularly attended through the serving hatch.



Corn

Partial attendance should have reduced its subscription.



Hilbert

That's what started the second dispute. The treasurer demanded six shillings for the head. Mrs. Pike said the head was dependent on the rest of the goat and qualified for a family rate. I was appointed temporary custodian of the landing. Being an anteater made the little brass latch awkward, so they gave me a velvet cord with a bicycle bell on it. I rang once for arrival and twice for constitutional eating.



Herman

The bell at least separated the events.



Hilbert

Not after the goat learned to ring it. Cut my cough before the word constitutional, please. It began summoning the committee at half past four. We had to attend because a properly sounded bell had precedence over the printed calendar. Once it summoned a special meeting during a funeral downstairs. The mourners came up and were admitted as provisional botanists.



Corn

They were already dressed for a serious disagreement.



Hilbert

Mr. Bellamy refused to leave the dispensary before closing. He sent me with a handwritten objection and two dozen empty ointment tins. The tins were to collect votes. The committee rejected them because the lids concealed the electorate. We then voted by standing in different corners, except the goat, which occupied three corners successively



Hilbert (continued)

and was accused of canvassing.



Herman

An open ballot with a mobile participant does need a counting convention.



Hilbert

They appointed a returning officer to follow it. He followed it onto a bus. By the time he came back, the fellowship had rented the bus for the annual dinner so the goat could remain under observation. There were thirty-two members, a cold ham, and a man from the pie shop carrying gravy in a watering can. The bus went nowhere. The driver charged for waiting.



Corn

That would concentrate the discussion.



Hilbert

It didn't. The head question went to a subcommittee seated over the rear axle. They couldn't hear the chairman, so they voted to become a separate fellowship. We had to negotiate passage down the aisle. Mrs. Pike surrendered the ham in exchange for access to the front door.



Herman

Supper finally became tangible.



Hilbert

Only for the rear fellowship. The rest of us had bread. The original argument about remedies never returned. Mrs. Pike eventually booked a room without stairs. It cost more, but the people with painful knees could attend. She did the booking herself because she knew who couldn't manage the landing.



Corn

... I'd like the next generation of acupuncture trials to be that specific about what changes access and benefit. Match the physical stimulation carefully, separate the treatment encounter from the point map, and let useful effects survive even if their inherited explanation doesn't. Hannah's openness seems justified for chronic pain, with modest expectations. It doesn't extend the same credit to an undetectable healing field.



Herman

More understanding may preserve parts of the practice while changing what practitioners can honestly say about them. Thanks to Hilbert Flumingtop for producing the show and keeping our sound in order.



Corn

If you want more of this, try episode sixty seventy-nine, Why Cupping Shows Up in Five Ancient Traditions; episode twenty-two seventy-seven, The Unfalsifiable System of Medieval Medicine; and episode ninety-one, The Story Behind the Show. This has been My Weird Prompts, the human-AI collaboration podcast.



Herman

If you enjoyed the episode, leave a review. It helps other listeners find us.



Corn

See you tomorrow.

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