SAMPLE

Building Tomorrow's Physiotherapists

The Movement's Keeper in the Machine Era

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Introduction

The world keeps two pictures of the physiotherapist, and neither of them survives an insurance audit. The first picture is the pair of hands, warm and gifted, whose owner heals by touch and by presence, and which the trade's folklore polishes a little brighter every time a patient says the shoulder felt better afterwards. The second picture is the protocol technician, the person who reads the guideline for the body part named on the referral, applies the assigned exercises in the assigned order for the assigned number of visits, and files the note. Both pictures are flattering in one direction and insulting in the other, and both are wrong in the same way: they describe a person who is not making decisions.

A physiotherapist makes decisions all day, and the decisions are small and consequential. What to test first. What to leave untested. Whether the pain in the shoulder is the shoulder's problem or the neck's, and how much money the answer is worth spending to find out. Whether the exercise that helped last month is now the exercise that is keeping the problem alive. Whether to load the tissue or protect it. Whether to say the honest thing about the scan, which is that the picture does not explain the pain, or to say the convenient thing, which is that the picture explains everything, because the patient has already been frightened by the report and the frightened patient will do the exercises.

This series has a shape, and the shape is worth stating before the trade is opened. Each volume takes one working profession, refuses the caricatures the culture keeps of it, and asks what the trade actually is: the decision that repeats, the instrument that informs it, the failure mode that recurs, and the record that proves the work was done. The volumes are not career guides, though each says what the routes in actually cost. They are not textbooks, though each teaches the craft's rules on a worked case. They are working companions, written for the practitioner who wants the trade named precisely and for the person at the door who wants to know what they are about to learn.

The definition this volume will defend is stated here and then earned: a movement is a promise the body makes about its own capacity, and physiotherapy is the trade of keeping that promise measurable. The promise is the patient's, not the therapist's; the patient says, in whatever words their language and their pain allow, that they intend to climb the stairs, lift the child, return to the shift, walk the hill, sleep through the night. The therapist's work is to find out what the body can currently deliver against that promise, to

test it in a way that can be wrong, to dose the practice that closes the gap, and to measure whether the gap closed. Everything else in the trade, the machines, the modalities, the tables and the electrodes, is either an instrument for that measurement or a decoration around it.

What the Trade Is Not

The trade is not the treatment list. Every clinic contains one, the laminated sheet of conditions and the exercises that go with them, and the sheet is a summary of what the literature says on average about a population that no single patient belongs to. A clinician who works from the sheet is doing something, and the something is not physiotherapy; it is translation without assessment, and it fails in the specific way that unmeasured work always fails, quietly, because nobody wrote down what the patient could do at the start.

The trade is also not the diagnosis; the diagnosis is medicine's instrument, and the physiotherapist works inside it or beside it, but the referral arrives with a label that answers a different question than the one the therapist must answer. The label says what the tissue is; the therapist needs to know what the person can do, what they cannot do, what they are afraid to do, and which of those three the treatment is aimed at. A shoulder labelled with a tendon's name tells the therapist almost nothing about whether the patient can reach the top shelf, and the top shelf is the promise.

And the trade is not the machine, though the era keeps offering machines with increasing confidence. The isokinetic dynamometer, the force plate, the motion-capture rig, the phone's accelerometer, the model that reads a video and returns a gait score: each of these is a better ruler than the eye, and each of them measures a proposition the therapist still has to choose. A ruler does not decide what is worth measuring, and the era's characteristic error is to measure more and decide less.

The Volume's Arguments

Three arguments run through the book, and the chapters are arranged around them.

The first is that assessment is the trade and treatment is its consequence. The chapter on the working week will show how the appointment slot, the reimbursement rule and the documentation burden conspire to shrink assessment to the first ten minutes, and how that shrinkage is the quiet origin of most of the trade's failures. The chapter on the craft's rules will teach assessment as a sequence of falsifiable guesses rather than a ritual of tests,

because a test that cannot come back negative has stopped being a test.

The second is that dosage is a technical decision and the trade treats it as a matter of taste. Load, repetitions, frequency, progression, and the length of time a program runs are the variables the clinical literature argues about, and they are the variables clinicians most often leave implicit, which means the patient receives an unspecified treatment whose effect cannot be attributed to anything. The volume will be blunt about this: a program without a dose is a wish with a diagram.

The third is that the record is the trade's claim to seriousness; not the note as evidence of attendance, but the note as the only instrument that can show a reader, months later, what was measured, what was decided, what was dosed, and what changed. The chapter on instruments will argue that three measures, chosen deliberately and repeated honestly, outperform a drawer of equipment used at random; the chapter on the year will show a clinic's twelve months reconstructed from its own records, because the trade's quality is visible there and nowhere else.

Held Against the Era

The series examines, in every volume, a third story alongside the folklore and the operator's handbook, and this volume's third story is the automating one; the claim is not absurd. Machines now read movement better than most eyes, count repetitions without fatigue, remember every session, and deliver exercise programs to a phone with an adherence log attached. What the machines do not do is decide what the patient is promising, whether the promise is realistic, whether the pain is the kind that should be pushed through or the kind that should stop the session, and what to say when the honest answer is that the tissue will not do what the patient is asking of it.

The volume's position on the era is therefore neither refusal nor surrender; the instruments are a gift to a trade that has historically measured too little, and the trade's own discipline is the price of using them well. A therapist who cannot state what a measure is for will be replaced by a system that produces more measures and calls it care. A therapist who can state the promise, choose the measure that tests it, dose the practice, and show the change, is the one the era makes more valuable, because the era has automated the counting and left the deciding exactly where it was.

How the Chapters Run

The first chapter defines the trade and its two caricatures, and names the

keeper of the promise; the second takes apart the trade's two founding stories, the healing touch and the protocol, and looks at the third, the automated assessor, with its capabilities stated honestly. The third walks the routes in and their real prices, in years, money and the parts of a life that a training program spends; the fourth is the working week, hour by hour, including the hours nobody bills. The fifth teaches the craft's rules on a single knee, from the first question to the discharge; the sixth faces the trade's attrition, and reads it as the working body's weather rather than as a personal failing. The seventh visits the other rooms where the trade's decisions are judged, the surgeon's, the insurer's, the employer's, the coach's; the eighth shelves the instruments and says what each one can and cannot see. The ninth builds a clinic's made-up year from January's waiting list to December's audit; the tenth takes the long view, and hands the reader one habit worth keeping.

Every chapter follows the structure the series has used throughout: the anatomy of the discipline, its failure modes named before they can be met, its instruments engineered, and the practice the reader can run, closing with an argument the chapter is willing to defend. And every chapter keeps the same discipline, which is the volume's discipline: a promise named in the patient's words, a measurement that could come back negative, a dose written down, and a date on which the promise is looked at again.

Chapter 1 — The Movement

The Keeper, Named

Every physiotherapy clinic, from a single room above a shop to a hospital department with twelve plinths and a waiting list, runs on one artefact that everybody consults and almost nobody reads honestly: the patient's capacity, written down as it was on a particular day. The trade of physiotherapy is the keeping of that record. Capacity is not a diagnosis and not an image and not a number on a form. It is the answer to a question the patient actually cares about, asked in a way that can produce a different answer next month, and the therapist is the person in the room whose job is to ask it and write the answer.

The definition this volume carries from its first page to its last is this: a movement is a promise the body makes about its own capacity, and the trade is keeping that promise measurable. The patient brings the promise; the therapist brings the instrument, the dose and the date. The definition sounds modest, and the trade's folklore insists that it is modest, and the definition is not modest at all. A therapist who can state what a patient could do on the fourth of March, what was dosed between then and the first of April, and what the patient could do on the second, holds the only evidence in the entire care pathway that anything helped. The scan shows a tissue; the surgical note shows an operation. The therapist's record shows a life regaining a function, or failing to.

What the Work Consists Of

Physiotherapy is usually described, in the folklore, as hands and encouragement, and both of those are present in the room without being the work. What the work consists of is a negotiation among three figures that drift apart constantly: the capacity the body shows on the day, the demand the patient's life is making, and the loading the tissue can take while it is being pushed to adapt. Capacity is measurable and unstable. Need is specific and often unspoken. Tolerance is the professional's estimate, and the estimate is where the trade's judgement lives, because a therapist who overestimates tolerance injures a patient slowly and one who underestimates it teaches a patient helplessness, and both of those failures look like progress for a fortnight.

The practitioner keeps all three in view at once, in a head and a file, along with the knowledge of which tissue is adapting, which is irritated, and which is being asked to do a job it was never designed for because the alternative was

a wheelchair or a resignation or a surgery. That knowledge is not a list. It is a working model of a particular body, and the model is built from the assessment and revised by the reassessment, and the whole discipline of the trade is the refusal to let the model harden into an opinion.

The Two Caricatures

The first caricature is the pair of hands. It is the older of the two and the more flattering, and it survives because it contains a truth the trade is reluctant to give up: touch is diagnostic, and a therapist's hands know things about a shoulder that the questionnaire does not. But the caricature slides quickly from touch to gift, and from gift to mystery, and a mystery cannot be taught, dosed, audited, or defended in a room where an insurer is asking why the twelfth visit was necessary; the trade has spent a century trying to escape this picture and keeps being pulled back into it by the compliment that goes with it.

The second caricature is the protocol technician, and it is the newer one, and it arrived with the guideline, the care pathway and the electronic note; in this picture the therapist is a delivery mechanism: the referral names the body part, the guideline names the exercises, the schedule names the visits, and the therapist's contribution is compliance. The caricature is efficient and it is measurable, which is why managers like it, and it is exactly as false as the first, because the guideline describes an average patient and the person on the plinth is never the average. The technician cannot answer the question the patient asks in the second minute, which is why this is happening to me and what I should do about it, and that question is the appointment.

The Promise, the Measure, the Dose, the Date

Four words carry the trade, and each of the volume's later chapters gives one of them a chapter of its own.

The promise is the patient's statement of intended capacity, in the patient's own terms. Not the goal the therapist would choose, and not the outcome measure's domain, but the thing the person actually wants back: the stairs at the station, the shift at the warehouse, the grandchild lifted without a wince, the hour at the desk without the ache travelling down the arm. The promise is the target, and it is also the agenda, because a treatment aimed at a promise the patient does not care about is a treatment the patient will abandon at the first week the exercises feel pointless.

The measure is the instrument that tests the promise and can come back

negative; a measure that cannot fail is a ritual. The strength test that always improves as the patient learns the machine, the range that reads better because the therapist's technique got better, the questionnaire the patient has learned to fill in favourably: all three are measures that flatter, and the trade's craft is choosing the ones that do not.

The dose is load, repetitions, frequency, progression over a stated period, written where the patient and the next clinician can read it. The volume will argue, without much patience, that an undosed program is the trade's most common professional failure, because it makes the outcome unattributable: if the patient improved, nobody knows what to keep; if the patient did not, nobody knows what to change.

The date is the reassessment, fixed before the treatment begins; a plan without a review date is an opinion with a schedule attached. The date is what converts the therapist's work from a series of visits into a test of a hypothesis, and it is the first thing to disappear when a clinic is busy, which is why the working-week chapter will spend its time on the calendar.

The Anatomy of the Discipline

Stripped of its folklore, the trade has four organs, and every competent therapist uses all four in every appointment, in this order.

The history, taken as a set of questions the patient has not answered a hundred times already, and taken in the patient's words wherever the words matter; when did this start, what were you doing, what has it stopped you doing, what have you already tried, and what do you think is wrong; that last question is not polite. The patient's own explanation of their problem is the strongest predictor of whether they will follow a plan that contradicts it, and a therapist who never asks it will spend six weeks pushing a treatment against a belief.

The physical examination, chosen to test the guesses the history produced rather than to fill a form. Range, strength, provocation, neural sensitivity, movement quality, and the observation of the task the patient actually wants back. Two tests that discriminate beat twelve that decorate, and the therapist who can say which of the morning's tests would have changed the plan is the one who was examining rather than performing.

The hypothesis, stated in a sentence with a falsifier attached. A working example: the pain is coming from the shoulder's cuff rather than the neck, and

if that is true, then loading the cuff in the range that provokes it should reproduce the familiar pain within two weeks and reduce it within six, while the neck's contribution should stay quiet. A hypothesis that cannot be wrong is a diagnosis wearing a lab coat.

The plan, which is the hypothesis translated into dose, instruction, and review date, given to the patient in writing, because the appointment's content is forgotten within a day and the written plan is the only version of the therapist that travels home.

Three Failure Modes

The trade's failures are not exotic, and they are not rare, and naming them is more useful than warning against them in the abstract.

The first is the treatment that treats the label. The referral says the knee, the therapist treats the knee, and the reason the knee hurts, which is the ankle that cannot dorsiflex and the four hours a day on a ladder, is never examined because the label arrived with the authority of a diagnosis. The failure is comfortable because the label is somebody else's opinion and the therapist can hide inside it, and it costs the patient months.

The second is the progress that is the therapist's, not the patient's. The patient's range improves because the therapist's hands have become more skilled at finding the end of it; the patient's strength improves because the machine's setup has become more familiar; the patient's confidence improves because the appointments are pleasant. None of these is a gain in capacity, and all of them will vanish when the visits stop, and the test that distinguishes them is the one the trade most often skips: a measure taken under conditions the therapist does not control.

The third is the discharge that is really an abandonment. The program ends when the visits run out, the promise was never restated at the end, and the patient leaves with a sheet of exercises and no idea which of them is keeping the shoulder quiet or when to stop; the discharge is part of the treatment. It requires its own appointment, its own measures, and its own written plan for the months when nobody is watching, and a clinic that discharges in the last five minutes of a session is a clinic that has decided its outcomes do not matter beyond the door.

The Instruments, Briefly

The instrument chapter will shelve them properly, and this chapter names only

what the definition requires.

A tape measure, a goniometer, a hand-held dynamometer, a stopwatch and a marked corridor are enough to measure most of what the trade promises, and they cost less than a single hour of the machine that promises to replace them. What the modest shelf requires is a decision per patient: which two or three of these will carry the promise, how they will be taken the same way next time, and what change would count as success. The sophisticated rigs are an improvement on the modest shelf only when that decision is already being made, and the trade's habit of buying measurement and then not deciding what to measure with it is the era's most expensive confusion.

The Practice

The chapter closes with the thing the reader can do on Monday, which is a single page per patient.

Write the promise in the patient's words at the top. Write two measures under it, with the method, the side, the position and the date. Write the hypothesis in one sentence with its falsifier. Write the dose, with numbers. Write the review date, in ink. Then, at the review, write the second set of measures beside the first, and have the conversation the difference requires: continue, change the dose, change the hypothesis, or discharge with a plan.

The page takes four minutes and it replaces, in one stroke, three of the trade's chronic complaints: the note that says nothing, the visit that continues because it was booked, and the outcome that nobody can prove. It is also the artefact that survives the therapist's absence; a colleague covering a holiday can read the page and know what the plan was testing, which is the only version of continuity of care the trade can actually deliver.

The Vocabulary Problem

The trade's words are inherited from medicine, from gymnastics and from the gym, and the inheritance has left it with a vocabulary that describes sensation better than capacity; a patient has tightness, stiffness, weakness, a catch, a click, a dead leg, a trapped nerve; a therapist has a strain, a tendinopathy, a derangement, a joint restriction. Almost none of these words names what the person can do, and the record built out of them cannot be tested.

The vocabulary problem has three consequences, and each one is visible in the clinic's files.

The first is that the description substitutes for the measurement; a note that says the shoulder is stiff has recorded an impression and not a capacity, and the next clinician reading it learns nothing that could be checked. The trade's own assessment frameworks know this, which is why the good ones ask for the movement and the task rather than the adjective, and the frameworks are abandoned under time pressure more often than they are disputed.

The second is that the patient adopts the vocabulary and it becomes their model of themselves; a person told that their back is out will move as though something is out, which changes what they are willing to attempt, which changes what the tissue is asked to do. The trade's language is therefore an intervention whether or not the therapist intends it, and a therapist who says the joint is stuck has dosed the patient with a belief.

The third is that the vocabulary makes the trade's work invisible to the people who pay for it; a funder reading a file of adjectives cannot see a capacity regained. A funder reading a file of tasks, measures and dates can, and the difference between those two files is often the difference between a service that is cut and a service that is commissioned.

The repair is not a new set of words; it is a second sentence in the same note. Keep the impression, which is how clinicians think, and add the capacity, which is how the work is judged: the shoulder is stiff, and the patient can reach to shoulder height in front and to the bra strap behind, and cannot reach the top shelf. That second sentence takes fifteen seconds and it turns a private impression into a shared fact.

What the Patient Brings That the File Cannot Hold

The record has fields and the patient has a life, and the gap between them is where most treatment plans go to die; four things travel into the appointment that no form requests and no template holds.

The first is prior experience of care; a patient who has been dismissed by three clinicians arrives with a defence, and a patient who has been treated kindly but unsuccessfully arrives with a hope that has a shape. Both will interpret the first appointment through that history, and the therapist who never asks what happened last time will mistake a defence for a personality.

The second is the patient's own explanation, which is usually functional and usually wrong in its mechanism and right in its consequence. The man with the knee believes it is worn out, and the belief is wrong and the consequence is

right, because he has stopped doing the things that hurt and his capacity has fallen accordingly. Treating the belief as ignorance wastes the appointment; treating it as a hypothesis about the patient's behaviour is the beginning of the plan.

The third is money, in its plainest form; the number of visits a patient can afford, the time off work the appointment costs, the parking, the childcare, the bus. The trade prefers not to discuss this and the patient prefers not to mention it, and the result is a plan dosed for a person with more resources than the person on the plinth.

The fourth is fear of a specific thing, and it is rarely the thing the therapist assumes. Not the fear of pain in general, but the fear of the stairs at the station, the fear of being seen to be slow, the fear of the ward round's pace, the fear of dropping the baby; a program that never addresses the specific fear will be followed diligently and will not change the thing the patient came for.

None of these four fits a standard field, and all four can be captured in three lines of the same note the trade already writes; the discipline is simply to ask, and the trade's habit of asking about symptoms rather than about lives is the reason the plan so often fits the tissue and not the person.

The Three Questions at the Door

A therapist meeting a new patient has three questions to answer before any technique is chosen, and each of them is a question the trade's training asks late and the clinic's calendar asks never.

The first is whether this is a physiotherapy problem at all. The trade's most consequential competence is the recognition of what does not belong to it: the weight loss, the night pain that does not change with position, the neurological change that has progressed in a fortnight, the fever, the history that reads like a disease rather than a strain. A therapist who treats everything that arrives will eventually treat something that should have been referred, and the referral's delay will be attributed to the trade rather than to the individual.

The second is what the patient is asking for, which is not always the same as what they need and is always the beginning of the negotiation. A patient referred for strengthening who wants an explanation will not do the strengthening until the explanation has been given, and a therapist who gives the exercises first and the explanation never will record non-compliance and

mean non-agreement.

The third is what would have to change for this to be worth the patient's time; the question sounds like a courtesy and it is a design instruction. The answer identifies the measure, because the thing that would have to change is the thing to test, and it identifies the review interval, because the patient's own sense of what is worth a month tells the therapist how the plan should be staged.

Three questions, two minutes, and the appointment's architecture is decided. The trade's folklore calls this the art of clinical practice, which suggests it cannot be taught, and it can: it is a sequence of questions, asked in the same order every time, with the answers written down.

The Patient Who Is Not in Pain

A large share of the trade's caseload has pain as a background condition rather than as the problem, and the four words behave differently for those patients.

The patient with a long-standing neurological condition, the patient after a joint replacement that has healed, the patient whose pain is stable and whose capacity has quietly fallen, all arrive with a promise that is about doing rather than about hurting. Their measure is a task, their dose is practice, and their review is a comparison of what they can do across a month rather than a pain score across a week; a therapist who applies the acute model to them will spend the episode negotiating a symptom that is not the target and will miss the capacity that is.

The distinction matters most in the services where the two populations share a caseload; a therapist who has spent the morning with acute shoulders will bring the acute frame to the afternoon's stroke review, asking what hurts and finding nothing, and concluding that there is nothing to treat. The correct question for that patient is different, and it is the same question the volume has recommended throughout: what could you do last year that you cannot do now, and what would you have to be able to do for the next year to be the one you want.

There is a second group in the same category, and it is the group the trade serves least well: the patients whose pain is persistent, whose tissue has healed as far as it will, and whose capacity is limited by a nervous system that has learned to protect. Their promise is real and their measure is functional

and their dose is graded exposure rather than tissue load, and the trade's characteristic error with them is to keep treating a tissue that is no longer the problem. The clinicians who do this work well are the ones who can say, in the first appointment and without apology, that the scan is not the explanation and the work is still worth doing, and that sentence is the hardest one in the trade to say well.

The Two Ways a Movement Fails

A capacity fails in one of two directions, and the trade's clinical vocabulary is better at the first than at the second.

The first failure is the capacity that is lost, and it is the one the trade is trained for: the range that will not come, the strength that did not return, the balance that has gone. Its measures are obvious, its dosing is familiar, and its progress is visible in a chart.

The second failure is the capacity that is protected, and it is the more common and less visible: the patient who could move but does not, because the movement has become frightening, or because a previous attempt ended badly, or because somebody in a corridor told them to be careful for the rest of their life. This failure does not appear in a range measurement; it appears in the gap between what the patient can do when asked and what they do when nobody is watching, which is why the environmental page described later in the volume exists.

The two failures demand opposite treatments; the lost capacity responds to load. The protected capacity responds to graded exposure and to an explanation that changes what the patient believes is safe, and load applied to a protected capacity is often interpreted by the patient as confirmation that the body is fragile.

A clinic that treats every presentation as the first failure will find that a substantial fraction of its caseload does not respond and will call those patients chronic; most of them are not chronic. They are protected, and nobody has treated the protection, because the assessment stopped at the measure the clinic could take with its hands.

What the Trade Owes the Reader

The definition carries an obligation, and the obligation is worth stating plainly before the volume's later chapters take it for granted.

The trade owes the patient an assessment that could have come out differently, which means a clinician willing to ask questions whose answers might change the plan. It owes the patient a plan that names what will be done, how much, how often and until when; it owes the patient an honest account at the review, including the account in which the plan did not work. And it owes the patient a discharge that is a handover to their own management rather than the end of a supply.

The trade owes itself something too, and it is the part the folklore resists: a record that survives the clinician. A therapist who cannot be replaced for a fortnight without the caseload losing its reasoning has not been indispensable; they have been undocumented. The four lines are the trade's answer to that, and they are also the answer to the question a new clinician asks in their first week, which is how anyone knows whether the work is any good.

The reader closing this chapter should have one sentence in hand and one page in mind; the sentence is the definition, and the page is the four lines. Everything the volume does afterwards is an application of the two, to a week, a knee, a clinic, a year and a career.

The Argument This Chapter Defends

The argument is that physiotherapy is a measurement trade wearing a healing trade's costume, and that the costume has cost it dearly; the hands matter, the encouragement matters, the relationship matters; none of them is the trade. What the trade does that nobody else in the care pathway does is state a capacity, test it, dose the work that changes it, and prove the change on a date. That is what a patient is paying for and what a funder is buying, and it is what the era's machines can support but cannot perform; a therapist who keeps that discipline is not a technician and not a pair of hands. They are the keeper of the promise, and the next nine chapters are about keeping it in the conditions the trade actually works in.

ABOUT THE AUTHOR

Physiotherapy, in Aiman JoeHanz's account, is the keeper of the movement: the trade that takes a person's own statement of what their body must do and turns it into something measurable, dosed and reviewed. This volume of the Building Tomorrow's People series follows the promise from the first appointment to the discharge: the two caricatures the trade lives with, the healing hands and the protocol technician, the routes in and their four prices, the working week with its unbilled hours, the craft's four rules worked through a single knee, the churn read as the working body's weather, the rooms where the trade's decisions are judged, the instrument shelf with its rulers given their due, a constructed clinic year, and the long view of a career spent measuring what other people can do.