

Pain

A2

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What you need to know

Pain is the third topic of the Health psychology option (Papers 3 and 4). It has three parts: what pain is and how it works, how to measure it, and how to manage it. You should be able to:

1. **Functions of pain** (why we have it) and the **types of pain**: **acute** and **chronic** pain.
2. **Phantom limb pain** and **mirror treatment**, with a case study such as **MacLachlan et al. (2004)**.
3. **Theories of pain**: **specificity theory** and **gate control theory**.
4. **Subjective measures** of pain, including the **clinical interview**.
5. **Psychometric measures and visual rating scales**: the **McGill pain questionnaire** and the **visual analogue scale**, through the key study **Brudvik et al. (2016)**, which you must know in detail.
6. **Behavioural (observational) measures**: the **UAB pain behaviour scale**.
7. **Managing pain**: the **biological** (biochemical) treatment; the **psychological** treatments (cognitive strategies: **attention diversion**, **non-pain imagery** and **cognitive redefinition**); and the **alternative** treatments (**acupuncture** and **stimulation therapy/TENS**).
8. **Evaluate all of it** with the issues the syllabus names for this topic: individual and situational explanations, nature versus nurture, reductionism versus holism, determinism versus free will, case studies, idiographic versus nomothetic, quantitative and qualitative data, interviews, observations, psychometrics, generalisations from findings, application to everyday life, cultural differences, and objective and subjective data.

Studies marked "e.g." in the syllabus can be swapped for another suitable one; the key study cannot. Before 2024 the topic also had organic and psychogenic pain, the Wong-Baker faces scale, the Paediatric Pain Questionnaire and communication in the clinical interview; they are under "Older syllabus content" because older questions ask about them.

Understand it

The topic at a glance

Part	What it covers	Study to know
Types and theories	Functions of pain; acute and chronic pain; phantom limb pain and mirror treatment	MacLachlan et al. (2004)
Types and theories	Specificity theory; gate control theory	Descartes; Melzack and Wall (1965)
Measuring pain	Clinical interview; McGill pain questionnaire; visual analogue scale; UAB pain behaviour scale	Brudvik et al. (2016), key study
Managing pain	Biochemical; cognitive strategies; acupuncture and TENS	(no single study)

Functions of pain

Pain is an unpleasant feeling that tells us something is wrong with the body. It can feel sharp, burning, throbbing or aching, and it is both a **sensation** and an **emotional experience**: how much it hurts depends on the person and the situation, not only on the damage. Pain is useful:

- it **warns** of damage or danger, so we pull a hand away from a hot pan before it burns badly;
- it makes us **protect** an injured part and **rest** it, so it can heal;
- it helps us **learn** to avoid what hurt us before;
- it tells us to **seek help**: a pain that won't go away sends us to a doctor.

People born unable to feel pain are often badly injured without noticing, which shows how important the warning is.

Acute and chronic pain

- **Acute pain** starts suddenly, usually has a clear cause in one place (a cut, a burn, a broken bone, toothache, a headache) and lasts a short time, from moments to a few weeks. It can be mild or severe. It fades as the body heals and usually responds well to painkillers.
- **Chronic pain** lasts a long time: months or years (usually defined as **more than 3 months**; some sources say 6). Examples: **arthritis**, long-term **back pain**, migraines, cancer pain. It may continue after the injury has healed, is hard to treat, and affects sleep, work, mood, relationships and quality of life. Acute pain that is not treated well can become chronic.

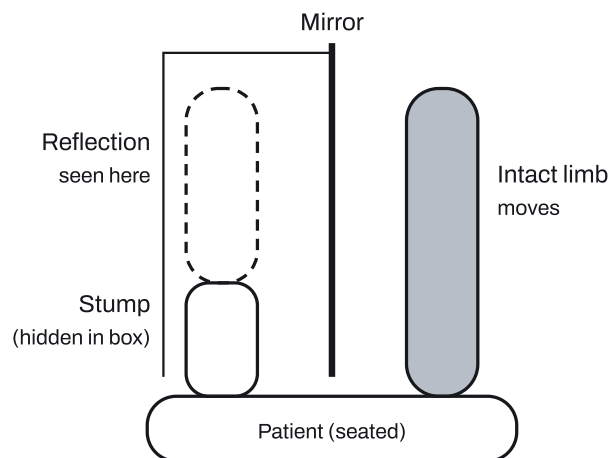
Phantom limb pain

Phantom limb pain is pain that feels as if it comes from a limb that has been **amputated** (or is missing). Many amputees feel the missing limb is still there (a **phantom limb**), and many of them feel pain in it: cramping, burning or shooting pain, or the feeling that the phantom hand is clenched or twisted and can't be moved. It is

hard to treat, because there is no damaged tissue to treat, and it is strong evidence that pain is made by the **nervous system and brain**, not simply by the injured part.

Mirror treatment

Mirror treatment (mirror box therapy) was first used by **Ramachandran** with arm amputees in the 1990s.



1. A mirror is placed upright between the limbs, facing the **intact** limb. The stump is hidden behind it.
2. The patient looks into the mirror. The **reflection** of the intact limb appears in the place of the missing one, so it looks as if they have two whole limbs.
3. The patient **moves the intact limb** (bends the knee, points the toes, opens and closes the hand) while watching the reflection. To the brain it looks as if the **phantom limb is moving**, and moving without pain.
4. The exercises are repeated over many sessions; later the patient can practise them without the mirror.

The brain gets visual feedback that matches the movement it is "sending" to the missing limb. If the intact limb moves without pain, the phantom seems to as well, and the cramped or clenched feeling and the pain can ease.

A case study of mirror treatment: MacLachlan et al. (2004)

Aim: to see whether mirror treatment, until then used with arm amputees, could reduce phantom limb pain in a person who had lost a **leg**.

Participant: one man, called **Alan**, whose leg had been amputated and who was reporting **phantom limb pain** at the time of treatment. It was the first case study of mirror treatment with a **lower limb** amputation.

Procedure: Alan sat with a mirror placed between his legs, so that the reflection of his intact leg appeared where the missing leg should be. He watched the reflection while doing a set of leg exercises (such as bending the knee and moving the foot), repeated in regular sessions over several weeks. Over time he did the exercises without the mirror, imagining the movement. His pain and his experience of the phantom were recorded throughout.

Results: during the treatment his phantom limb pain **fell significantly**; he felt more **control over moving** the phantom leg; and the way the phantom leg **felt** to him changed.

Conclusion: mirror treatment can reduce phantom limb pain after a leg amputation, not only an arm.

Evaluating it:

- **Case study:** rich, detailed data about one person's pain over time (**idiographic**), useful for a rare problem; but one man cannot be generalised to all amputees.
- **No control:** the pain might have fallen anyway with time, or because of the attention he received (a placebo effect); there was no comparison condition.
- **Subjective data:** pain was reported by Alan himself, which is the only way to know a phantom's pain, but it may be affected by wanting the treatment to work.
- **Application to everyday life:** cheap, no drugs, no side effects, no addiction, and the patient can use it **at home** whenever the pain comes.

Specificity theory

Specificity theory (from **Descartes**, 1664) says pain is a **specific sensation** with its own system, like a bell wired to the brain:

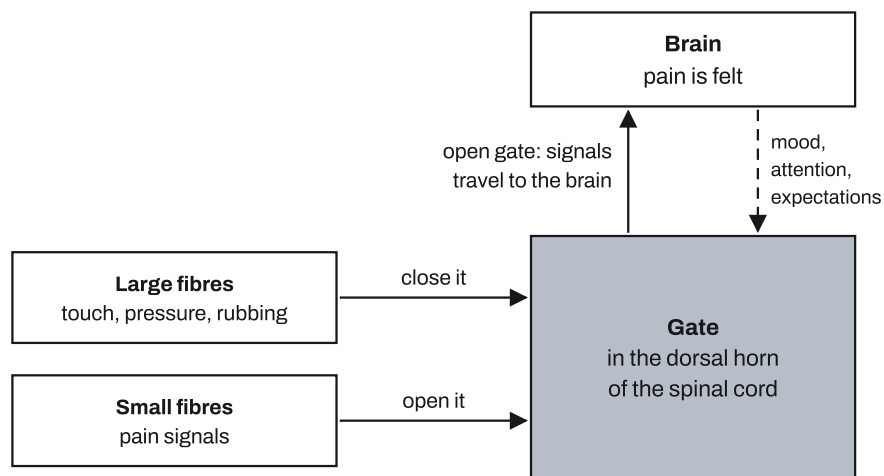
- special **pain receptors** in the skin and body detect damage;
- pain travels along its own **dedicated nerve pathway** through the spinal cord to a **pain centre** in the brain;
- so the **amount of pain** matches the **amount of damage**: more damage, more pain.

Evaluating it:

- **Strength:** simple and partly right: there are nerve endings (nociceptors) and fibres that respond mainly to damage, so pain does have a physical pathway. It explains why painkillers that block signals from an injury work.
- **Weakness:** it cannot explain **phantom limb pain** (there are no receptors in a missing limb), or why injured athletes or soldiers may feel little pain until later, or why the same injury hurts more when we are anxious and less when we are distracted. Pain is not one fixed signal.
- **Reductionist and deterministic:** pain is just a reflex-like signal, with no part for mind, mood or culture; **nature**, not nurture.

Gate control theory

Gate control theory (**Melzack and Wall**, 1965) keeps the nerve pathways but adds a **gate** in the **spinal cord** (in the **dorsal horn**) that controls how many pain signals reach the brain.



- **Small (thin) nerve fibres** carry pain signals from the damaged area. Their activity tends to **open** the gate.
- **Large (thick) nerve fibres** carry ordinary touch, pressure and vibration. Their activity tends to **close** the gate.
- When there is more small-fibre than large-fibre activity, the gate opens, signals travel up to the **brain**, and pain is felt. When large-fibre activity wins, the gate closes and less pain is felt. That is why **rubbing** a bumped knee helps.
- **Messages from the brain** come back down and also open or close the gate. **Anxiety, focusing** on the pain and expecting it to be bad open the gate; **distraction, calm, positive thinking** and hope close it. So the same injury can hurt more or less depending on the person's thoughts and situation.

Evaluating it:

- **Strength: explains psychological effects:** why attention, emotion, expectation and culture change pain, which specificity theory couldn't.
- **Strength: application to everyday life:** it explains why **TENS** and **acupuncture** (stimulating large fibres) and the **cognitive strategies** (messages from the brain) work, and it led to new treatments.
- **More holistic:** it includes biology (fibres, spinal cord) and mind (mood, attention); still **reductionist** in that pain is explained by nerve fibres opening and closing a gate.
- **Weakness:** the gate is a model; no single physical "gate" has been found, so its psychological part is hard to test directly. It also struggles to explain phantom limb pain, where there are no signals from the missing limb at all.
- **Nature and nurture:** the fibres and the gate are **nature** (we are born with them), but what opens and closes the gate from the brain (fear, expectations, how our family reacted to pain when we were young, techniques we learn) is **nurture**.

Measuring pain

Pain is **subjective**: only the person in pain feels it, so every measure is an attempt to get at a private experience. There are three kinds.

Kind	Measures	Data	Strengths	Weaknesses
Subjective	clinical interview	mostly qualitative	the patient knows their own pain best; detail on where, what kind and what makes it better or worse	vague words ("really bad"); no precise score; patients may exaggerate or hide pain
Psychometric and visual rating scales	McGill pain questionnaire; visual analogue scale; numerical and faces scales	quantitative (the MPQ also gives descriptive words)	quick; a number that can be compared over time and between patients	the same score may mean different pain to different people; needs language and understanding
Behavioural / observational	UAB pain behaviour scale	quantitative	someone else records it, so it works for people who can't self-report; done over weeks	observers can misread or miss behaviour, and don't ask the patient what they feel

The clinical interview

A **clinical interview** is a conversation, usually **face to face** (or by telephone or online), between a **medical practitioner** and a **patient**, in a **medical setting**, to **diagnose** the problem and decide or check **treatment**. The practitioner asks questions such as where the pain is, how strong it is, what it feels like, when it started, whether it comes and goes, what makes it worse or better, and how it affects sleep and daily life. They also notice **non-verbal** signs (wincing, holding the painful part, limping), which can be scored with parts of the UAB scale.

- **Strengths:** the patient can describe their pain in their own words and explain anything the practitioner asks; follow-up questions give detail; the practitioner can combine what is said with what is seen.
- **Weaknesses:** the patient may not have the words to describe pain, or may not know where organs are (indigestion mistaken for a heart attack); it gives **no precise level** of pain, unlike a psychometric measure; patients may exaggerate (or play down) pain, and practitioners tend to **underestimate** it (as Brudvik et al. found).

The McGill pain questionnaire (MPQ)

The **McGill pain questionnaire** is a **psychometric** self-report for **adults**, in **four parts**:

1. **Where is your pain?** The patient marks the painful areas on a **drawing of the body** (front and back).
2. **What does your pain feel like?** The patient chooses, from lists of words, the ones that describe their pain, such as **shooting** or **pulsing**.

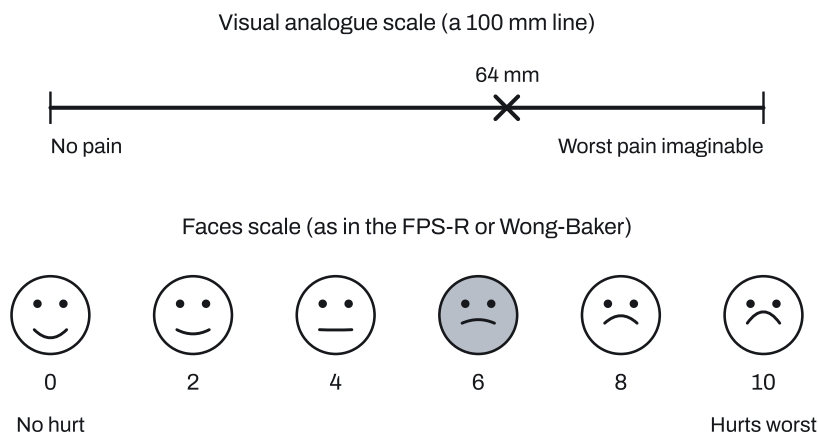
3. **How does your pain change with time?** Open questions such as what relieves the pain and what makes it worse, which give some **qualitative** data.

4. **How strong is your pain?** The patient rates the **intensity** of the pain.

- **Strengths:** measures the **quality** and **location** of pain, not just its strength; standardised, so scores can be compared; the word lists give patients a vocabulary for their pain.
- **Weaknesses:** long and needs a good vocabulary, so it is **too complex for children** and hard for people in severe pain; the words are English, so translations and cultures may not match; patients may pick words that don't really fit.

Visual rating scales

A **visual analogue scale (VAS)** is a line, usually **10 cm (100 mm)** long, with **"no pain"** at one end and **"worst pain imaginable"** at the other. The patient marks the point on the line that matches their pain, and the distance from the "no pain" end is measured in millimetres, giving a score from 0 to 100.



Versions:

- a **numerical rating scale (NRS)**: the patient picks a number from 0 (no pain) to 10 (worst pain);
- a **box scale**: boxes numbered 0 to 10 to tick;
- **faces scales** for young children, such as the **Faces Pain Scale–Revised (FPS-R)** and the **Wong-Baker FACES** scale: **six faces** from a happy face (no hurt) to a very upset face (hurts worst), scored **0, 2, 4, 6, 8, 10**; the child points to the face that shows how much they hurt;
- the **coloured analogue scale (CAS)**: a strip whose colour gets deeper towards red at the "most pain" end; it runs from 0 (green, no pain) to 100 (red, the most pain), and the child marks or points to their pain.
- **Strengths**: quick and simple, even for people in pain and for children; gives **quantitative** data that can be compared and tracked; a 0–100 line is **sensitive** to small changes, for example after a painkiller; the patient decides, so it reflects **their** pain.

- **Weaknesses:** only measures **intensity**, not where the pain is or what it is like; a mark of 60 may mean different pain to different people; young children may not understand it, may pick the end faces, or confuse sadness with pain.

Testing a VAS's validity:

- **Criterion validity:** give patients the VAS and another accepted measure (such as the MPQ or a numerical scale) at the same time; if the scores **correlate strongly**, the VAS is measuring pain.
- **Construct validity:** check the VAS behaves as theory says pain should: scores should **fall** after an effective painkiller and be **higher** for a broken bone than a bruise.
- **Ecological validity:** check whether a mark on paper reflects the patient's real experience of pain in daily life, for example by comparing it with what they can and can't do at home.

Key study: Brudvik et al. (2016), pain assessments by doctors, parents and children

Aim: to compare how **physicians (doctors)**, **parents** and **children** rate a child's pain in an emergency setting, and whether children in pain get pain relief.

Participants: children aged **3 to 15** who came to one emergency outpatient clinic with an illness or injury, each with a parent, and the doctors who examined them.

Procedure: the child, the parent and the doctor each rated the child's pain **separately**, without seeing the others' ratings. Children used a scale to suit their age:

Age	Scale the child used
3 to 8	a faces scale (FPS-R): six faces scored 0, 2, 4, 6, 8, 10
9 to 15	the coloured analogue scale (CAS) : a line from no pain to the most pain, coloured from 0 (green) to 100 (red)

Parents and doctors gave a **numerical rating (NRS)** from 0 to 10. Records showed whether the child was given pain relief.

Results:

- Mean pain ratings: doctors **3.2**, parents **4.8**, children **5.5** (out of 10). The doctors' ratings were the lowest by **2.3** points; the parents' were within **0.7** of the children's.
- Doctors underestimated pain for **every kind of condition**, most of all for **wounds, infections** and **soft tissue injuries** (such as sprains), and least for **fractures**.
- Doctors' ratings got closer to the children's as the pain got **more severe**, but still only about **half** of the children with **severe** pain were given pain relief.

Conclusions:

- Emergency doctors **significantly underestimate** the pain of children aged 3 and over, across all conditions, especially wounds, infections and soft tissue injuries.
- Doctors' assessments improve as pain increases, yet many children in severe pain still don't get pain relief.

- Doctors should know they are likely to underestimate, and should use **children's own ratings** (on age-appropriate scales) and **parents' ratings** to improve pain management.

Evaluating it:

- Psychometrics and quantitative data:** standard scales give numbers that can be compared between the three raters; but a number says nothing about what the pain is like.
- Children in research:** young children may not understand the scale or the instructions, may not be able to describe their pain, and may not understand the **right to withdraw**, so **parents' consent** is needed. Children in pain may not want to fill in a scale.
- Validity:** each child used a scale suited to their age, which improves validity, but children used different scales from the adults, so the comparison is not exact. A faces scale may measure upset rather than pain.
- Generalisations:** one emergency outpatient clinic; doctors elsewhere, or in other cultures, may judge pain differently.
- Application to everyday life:** a clear message for hospitals: ask the child.

The UAB pain behaviour scale

The **UAB pain behaviour scale** is an **observational** measure. A trained observer, often a nurse, watches the patient and rates **10 pain behaviours**, each as **none (0)**, **occasional (½)** or **frequent (1)**, so the total is from **0 to 10**:

	Category	Example
1	Vocal complaints: verbal	saying "it hurts", complaining
2	Vocal complaints: non-verbal	groans, moans, gasps, sighs
3	Down time	time spent lying down because of pain during the day
4	Facial grimaces	wincing, screwing up the face
5	Standing posture	stooping or bent instead of upright
6	Mobility	limping, walking slowly or not at all
7	Body language	clutching or rubbing the painful site
8	Use of visible support equipment	crutches, a brace, a cane, leaning on furniture
9	Stationary movement	unable to sit or stand still, shifting position
10	Medication	how much pain medication is taken

The chart has a column for **each day of the week over three weeks**, so it is a **longitudinal** measure: it shows whether pain behaviour is going down over time, which tells the doctor whether a treatment is working and whether a dose should go up or down.

- Strengths:** **objective** in that it records what is seen, not what the patient says; **quantitative**, so it is easy to compare days; works for patients who **can't self-report** (young children, people who can't speak); quick for a nurse to complete.

- **Weaknesses:** the observer may **misinterpret** behaviour (a grimace may not mean pain) or **miss** it; the observer doesn't feel the pain and doesn't ask the patient; patients may act differently when watched; UAB scores don't always agree (**correlate**) with self-report measures such as the MPQ.

Managing and controlling pain

Kind	Treatments	How it reduces pain
Biological (biochemical)	peripherally acting analgesics; centrally acting analgesics; local anaesthetics	drugs block pain signals or the chemicals that cause them
Psychological	attention diversion; non-pain imagery; cognitive redefinition	messages from the brain close the gate
Alternative	acupuncture; stimulation therapy/TENS	stimulating the skin or nerves closes the gate and releases endorphins

Biochemical treatment

- **Peripherally acting analgesics**, such as **aspirin**, **ibuprofen** and **paracetamol**, work at the site of the pain (in the **peripheral** nervous system), reducing the chemicals that damaged tissue releases, which make nerve endings sensitive. Bought "over the counter" for headaches, toothache and minor injuries.
- **Centrally acting analgesics**, such as **morphine** and other **opiates**, act directly on the **central nervous system** (brain and spinal cord), copying the body's own painkillers (**endorphins**). Used for severe pain, such as after surgery or in cancer.
- **Local anaesthetics** stop nerves in **one area** from sending signals: rubbed in as a **cream** (mild), or **injected** (strong), for example before a tooth is taken out or a wound is stitched, or as an epidural in childbirth.
- For **nerve** pain such as phantom limb pain, doctors may prescribe drugs that calm damaged nerves, such as gabapentin (Neurontin).
- **Strengths:** fast and effective, especially for **acute** pain; strong research evidence; easy (take a pill); local anaesthetics allow painful procedures.
- **Weaknesses:** **side effects** (stomach upset from aspirin, drowsiness and constipation from opiates); opiates bring **tolerance** and **addiction**; they treat the symptom, not the cause; the patient is **passive**; long-term use for **chronic** pain is risky.

Psychological treatments: cognitive strategies

These change how the person **thinks** about or **attends** to the pain, so messages from the brain close the gate.

- **Attention diversion:** focusing on something unrelated to the pain so attention is pulled away from it.
Passive: watching television, looking at a picture, listening to music. **Active:** counting backwards, singing, doing a puzzle, playing a game. For toothache, a person could watch a film or do a crossword while waiting for the dentist.
- **Non-pain imagery:** imagining a scene that is **unrelated to or incompatible with** the pain, such as lying on a warm beach or walking through a cool forest, or picturing the pain as something else (a burning feeling as cool water). For toothache, imagining the jaw packed in cool, soft snow.
- **Cognitive redefinition:** replacing **negative**, catastrophic thoughts about the pain ("this is the worst pain ever, I can't stand it") with **realistic, positive** ones ("it will ease when the dentist fixes the tooth; I have coped with worse"). It changes the meaning of the pain; it does **not** use imagery.
- **Strengths:** no side effects or addiction; the patient is **active** and in **control**, which itself reduces distress; can be used **anywhere, any time**, at no cost; works alongside drugs.
- **Weaknesses:** hard to concentrate on anything else when pain is severe; needs **practice** to work, unlike a quick pill; some people prefer a medical treatment and don't believe it can help; works better for mild or acute pain than severe chronic pain.

Alternative treatments

Acupuncture comes from traditional Chinese medicine.

- Between **5 and 20** fine, stainless-steel **needles** are inserted into the skin at chosen points along **meridians**, lines through which life energy (**qi**) is said to flow, and left for **10 to 20 minutes**.
- The needles may be twisted by hand or given mild electrical pulses (**electro-acupuncture**).
- Explanations: in Chinese medicine it restores the flow of qi; in Western terms it stimulates sensory nerves, which **closes the gate**, and triggers the release of **endorphins** (natural painkillers) and serotonin. It is used mainly for **chronic** pain (back pain, headaches, arthritis), but also for acute pain, and can even be used instead of an anaesthetic.
- **Strengths:** few side effects and no addiction; can be used alongside drugs; many patients report relief.
- **Weaknesses:** needs a **trained acupuncturist** who knows where the points are (it isn't self-treatment); people with a fear of **needles** won't try it; possible bruising, bleeding or infection from needles; often not paid for by health services, and several sessions are needed; evidence is mixed and part of the effect may be **placebo**; people used to Western medicine may not believe in it.

Stimulation therapy works by **counter-irritation**: a mild, new sensation draws attention away from the stronger pain. The main example is **TENS (transcutaneous electrical nerve stimulation)**.

- **Electrodes** are stuck on the **skin** near the painful area and a small battery unit sends **mild electrical pulses** through them, felt as tingling.
- The patient **controls it themselves** (it is **self-administered**), turning it up or down.
- It stimulates the large fibres, **closing the gate**, distracts from the pain, and may increase the release of **endorphins**. It is used for back pain, joint pain and labour pain.

- **Strengths:** no drugs, so no drug side effects or addiction; the patient is in control and can use it at home; cheap once bought.
- **Weaknesses:** doesn't work for all kinds of pain or all people; **burns** or skin irritation if misused; hard to find the right **placement**; the tingling is itself a mild discomfort.

Acupuncture and TENS compared: acupuncture needs a **practitioner**, TENS is **self-administered**; acupuncture uses **needles** that go into the skin, TENS uses **electrodes** on the skin; acupuncture is said to **relieve** pain (and can even **prevent** it in place of an anaesthetic), TENS mainly **distracts** from it while it is switched on. Don't call acupuncture a stimulation therapy.

Issues and debates for this topic

Issue	How it applies here
Nature versus nurture	Fibres, the gate and pain receptors are nature; how anxiety, attention, upbringing and culture change pain, and learned techniques that close the gate, are nurture.
Individual and situational explanations	An injury is situational; how much it hurts depends on the individual's mood, expectations and coping.
Reductionism versus holism	Specificity theory and drugs reduce pain to signals; gate control and cognitive strategies add the mind, so are more holistic.
Determinism versus free will	Specificity theory is biologically deterministic; cognitive strategies, TENS and mirror treatment give the patient a choice and control.
Case studies	MacLachlan et al.'s single case: rich detail, but can't be generalised and has no control.
Idiographic versus nomothetic	Clinical interviews and case studies are idiographic; scored scales such as the VAS and UAB are nomothetic, allowing comparison.
Quantitative and qualitative data	Scales give numbers; interviews and the MPQ's words give qualitative detail.
Objective and subjective data	Self-reports are subjective; observation (UAB) is more objective but can't see the pain itself.
Psychometrics	Standardised, scored measures (MPQ, VAS): reliable and comparable, but the same score may mean different pain.
Generalisations from findings	One case (Alan); one emergency outpatient clinic (Brudvik et al.); the MPQ was written in English.
Cultural differences	Acupuncture is widely trusted in China but doubted by some Western patients; cultures differ in how openly pain is shown.
Application to everyday life	Gate control led to TENS; doctors can learn to ask children about pain; patients can use cognitive strategies at home.

Older syllabus content (2021–2023 questions only)

- **Pain** (definition): an unpleasant sensory and emotional experience linked to actual or possible damage to the body.
- **Organic pain**: pain with a **physical** cause, such as an **injury**, **pressure**, burns or **tissue damage** (a broken bone). Acute or chronic pain can be organic.
- **Psychogenic pain**: pain with **no physical cause** that can be found; it comes from psychological factors. **Phantom limb pain** was the usual example.
- **Wong-Baker FACES scale** (1987): six cartoon faces from a smiling face (0, no hurt) to a crying face (10, hurts worst); the child (aged **3 or over**) points to the face that matches their pain; it is a self-report of **intensity** only.
- **Paediatric Pain Questionnaire (PPQ)** (Varni and Thompson): the child chooses crayon colours for "no hurt", "a little hurt", "more hurt" and "a lot of hurt", then **colours in a body outline** to show where it hurts and how much; it also has a VAS and word lists.
- **Communication in a clinical interview**: **verbal** (what is said, such as open questions about the pain) and **non-verbal** (facial expression, holding the painful part), and a **patient-centred** style where the doctor listens and answers the patient's questions.
- **Medical techniques** was the older name for biochemical treatment; general anaesthetics (which make the patient unconscious) also counted.

Key facts and formulas

There is no formula list in the 9990 exam. "Learn it" means you must remember it.

Fact	Status
Functions of pain: warns of damage, makes us protect and rest an injury, helps us learn to avoid harm, tells us to seek help	Learn it
Acute pain: sudden, clear cause, short (moments to weeks); chronic pain: lasts months or years (usually more than 3 months), e.g. arthritis, back pain	Learn it
Phantom limb pain: pain felt in a limb that has been amputated; mirror treatment: the reflection of the intact limb moving looks like the phantom moving without pain	Learn it
MacLachlan et al. (2004): case study of Alan, a leg amputee with phantom limb pain; mirror exercises over several weeks; pain fell, more control over the phantom	Learn it
Specificity theory (Descartes): dedicated pain receptors and pathway to a pain centre in the brain; pain matches damage	Learn it
Gate control theory (Melzack and Wall, 1965): a gate in the dorsal horn of the spinal cord; small (pain) fibres open it, large (touch) fibres close it; messages from the brain open or close it	Learn it
McGill pain questionnaire: 4 parts (body diagram for location; words to describe the pain; how it changes over time; how strong it is)	Learn it

Fact	Status
Visual analogue scale: a 100 mm line from "no pain" to "worst pain imaginable"; score = distance of the mark in mm (0–100)	Learn it
Faces scales (FPS-R, Wong-Baker): six faces scored 0, 2, 4, 6, 8, 10	Learn it
Brudvik et al. (2016): children 3–15 at one emergency outpatient clinic; ages 3–8 used FPS-R, 9–15 used CAS; mean ratings doctors 3.2, parents 4.8, children 5.5; doctors underestimate, most for wounds, infections and soft tissue injuries	Learn it
UAB pain behaviour scale: 10 observed behaviours, each none (0), occasional ($\frac{1}{2}$) or frequent (1), total 0–10, rated daily over three weeks	Learn it
Biochemical: peripherally acting analgesics (aspirin, ibuprofen, paracetamol), centrally acting analgesics (morphine), local anaesthetics (cream or injection)	Learn it
Cognitive strategies: attention diversion (passive or active), non-pain imagery, cognitive redefinition	Learn it
Acupuncture: 5–20 fine needles along meridians (qi), left 10–20 minutes; TENS: electrodes on the skin, mild pulses, self-administered, counter-irritation	Learn it

How to do it

We have tagged 42 questions on this topic, from 2021 to 2026 (Papers 3 and 4; 30 different questions, as variants repeat them). 23 of them have parts of more than one type, so the counts add up to 78.

Question type	Questions
Outline or suggest a pain treatment	14
Outline or suggest a pain measure	11
Evaluate a pain treatment	9
Evaluate a pain measure	9
Plan a study about pain and justify it	9
Describe and evaluate essay	8
Compare two treatments or two measures	7
Define a type of pain or a pain term	7
Recall the key study by Brudvik et al.	2
Apply an issue or debate to a pain theory	2

1. Outline or suggest a pain treatment (14 questions)

Paper 4 Question 5 or 6, and Paper 3 Section A.

1. **Check which kind is asked for:** biological (biochemical), psychological or alternative. A treatment of the wrong kind scores **0**: cognitive strategies are not "alternative", TENS is not "psychological", "take a painkiller" is not psychological.
2. **Check acute or chronic:** a method for chronic pain earns nothing when acute pain is asked, and the other way round.
3. **"Outline" [2]:** name it and give a detail of **how it works**. "Acupuncture involves needles" is not enough: say how many, where (meridians), for how long, and why it reduces pain (endorphins, closing the gate).
4. **"Suggest" in a scenario [2]:** the treatment (1) and how it would help **this** person (1). Write the scenario into the answer: for toothache, "she could count backwards in threes while waiting for the dentist, so her attention is taken off the throbbing tooth". Just repeating "acute pain" is not applied.

Variations you will meet:

- **Outline two alternative treatments** for a case (a broken leg, shoulder pain): acupuncture and TENS, each with how it reduces pain; naming both alone earns 1.
- **Two ways medical (biochemical) techniques control acute pain:** peripherally acting analgesics (aspirin for a headache) and local anaesthetics (an injection before a tooth is pulled).
- **A biochemical treatment for phantom limb pain:** a drug for nerve pain such as gabapentin; TENS was also credited as it releases endorphins. Psychological techniques score 0.
- **Explain mirror treatment [2]:** the mirror box, moving the intact limb and watching its reflection, so it looks as if the phantom moves without pain; Alan's leg exercises can be used.

2. Outline or suggest a pain measure (11 questions)

Each measure: name it (1), then a detail of **how it works** (1), or how it applies to the person in the question.

- **Clinical interview:** practitioner and patient, face to face, in a medical setting, verbal and non-verbal, to diagnose and assess treatment; give example questions ("Where exactly is the pain?", "What makes it worse?").
- **McGill pain questionnaire:** body drawing, words to choose, change over time, how strong (adults only: 0 marks for children).
- **Visual analogue scale:** mark on a 100 mm line from no pain to worst pain; a **faces** scale for a child.
- **UAB scale:** an observer rates 10 behaviours (name some) as none, occasional or frequent, daily.

Variations you will meet:

- **Identify two UAB categories [2]:** one mark each. "Facial expressions" alone is too vague (a smile is a facial expression): write "facial grimaces". "Vocal complaints" needs "verbal" or "non-verbal" when the question has already used one.

- **Why the UAB is longitudinal:** the chart has a column for each day over three weeks, so pain behaviour is recorded over time; useful because it shows whether pain is falling and whether a drug dose should change. Describing the none/occasional/frequent scale doesn't answer it.
- **Measuring a child's pain without a self-report rating scale:** **observe** non-verbal cues (grimacing, limping, rubbing the painful part) or sounds (crying, groaning), or a **clinical interview** at the child's level ("point to where it hurts"). Not the MPQ, the PPQ or faces scales: they are rating scales.
- **Self-report questionnaires** (older): the MPQ and the PPQ; a VAS or faces scale is not a questionnaire.
- **How observing pain behaviour helps in a clinical interview:** grimacing, rubbing or limping shows how much pain the patient is in; parts of the UAB can be used.

3. Evaluate a pain treatment (9 questions)

Usually two strengths or weaknesses (or one of each), 2 marks each: the point (1), then applied to this treatment or the pain in the question (1). Use the lists under each treatment above. Make the two points different.

- **Acupuncture weaknesses:** needs an acupuncturist; fear of needles, so people prefer a pill; may be less effective than drugs for some pain; people raised on Western medicine don't believe in it; bruising or infection; cost and repeat sessions. "There are cultural differences" with no link to acupuncture earns nothing.
- **Attention diversion:** strength: active, usable anywhere; weakness: hard to concentrate when in severe pain, people may prefer a pill.
- **Mirror treatment strengths:** no side effects or addiction (unlike drugs); doesn't cause pain (unlike TENS); evidence (MacLachlan et al. with Alan); can be done at home.
- **"Discuss ... with a conclusion" [5] (2021–2023):** 1 mark per relevant strength or weakness, up to 4, plus 1 for a **conclusion:** a decision reached by reasoning ("so psychological techniques suit mild, ongoing pain best, alongside drugs for severe pain"), not a summary.

4. Evaluate a pain measure (9 questions)

Same 2 + 2 pattern; each point applied to the measure or the patient.

- **Weaknesses:** pain is subjective, so equal scores may not mean equal pain; patients may exaggerate (malingering) or play down pain to look well; a measure may not show the **cause** of pain; measures don't always agree (UAB and MPQ); one measurement is a snapshot; children can't express pain; doctors underestimate (Brudvik et al.). For the MPQ: the closed word lists may not contain a word that fits the patient's pain.
- **Observation weaknesses:** the observer may misinterpret behaviour, giving too much or too little medication; doesn't ask the patient whether the pain is easing; may miss behaviour; isn't feeling the pain.
- **Faces scale weaknesses:** a child in a lot of pain may not want to do it; may not understand it; a smiley face may not capture the type of pain; not reliable as pain changes. "Social desirability" scores 0 here: it is a problem with the participant, not the scale.

- **VAS strengths:** quantitative so pain can be compared and analysed; 0–100 detects small changes over time; patients feel their own pain is represented. Apply to acute pain, such as a broken wrist or a migraine, for the second mark.
- **How to test validity:** explain the method, not just name it: correlate the VAS with another pain measure (criterion validity); scores fall after a painkiller (construct); naming "criterion validity" alone scores 0.

5. Plan a study about pain and justify it (9 questions)

Paper 4 Section B, with the research methods topic (see that note for the methods). The pain part is the **psychological knowledge** behind the plan.

- **Since 2024 [24]:** (a) a plan [10] with the named method (controlled observation, face-to-face interview, field or lab experiment) and the two named features (location, behavioural categories, interview format, sampling, design, ethics, hypothesis); (b)(i) **describe** the pain knowledge it rests on [4]; (b)(ii) **two features** of that knowledge and how each shaped the plan [2 + 2]; (c) three 2-mark answers explaining a reason or weakness of **your own** choices, applied to your plan.
- **Before 2024 [18]:** a design [10] and its psychological and methodological evidence [8].
- **Use the method named:** a controlled observation means behavioural categories, not a questionnaire. **Use the treatment named:** mirror treatment, not TENS; **chronic** pain if the question says chronic.
- **Good knowledge to use:** mirror treatment and MacLachlan et al. (copy his leg exercises; use the UAB's grimaces and body language as behavioural categories); TENS (participants set their own pulse strength; ask about tingling and pain at fixed times); biochemical analgesics (a fixed dose of a peripheral analgesic against TENS for chronic back pain); cognitive strategies (one group per strategy, pain rated on a VAS before and after).
- **Designs:** an **independent** design for comparing two treatments (repeated measures would let the first treatment affect the second); random allocation; a VAS before and after as the DV.

6. Describe and evaluate essay (8 questions)

Paper 3 Section B: (a) **describe** [6] (8 before 2024), (b) **evaluate** [10] with a **named issue**.

1. **(a):** cover **every** part named. For "types and theories": acute, chronic **and** phantom limb pain, **and** the theory or theories named, with detail (the fibres and the gate, where the gate is, how the brain affects it). For "measuring": 3 or 4 measures in detail beats a long list done briefly. For "managing": biochemical, psychological and alternative, each with **how** it reduces pain.
2. **(b):** start with the **named issue** (nature versus nurture, practical applications, determinism versus free will, psychometrics), applied to each thing from (a), then several more issues, each explained with an example, then a judgement. Listing issues without saying **why** they apply stays in Level 1.
3. **Stay on the subtopic:** theories of pain in a "measuring" essay earn nothing.
4. **Older Paper 4 variant:** "To what extent are alternative techniques more effective than biochemical ones?" [12]: argue both sides with research, then a reasoned judgement.

7. Compare two treatments or two measures (7 questions)

A difference needs **both sides**: 1 mark for each side (or a levels mark for a well-explained pair). "One is used with children, the other with adults" won't count when the question has already given it.

- **Acupuncture vs TENS**: practitioner vs self-administered; needles in the skin vs electrodes on it; relieves (and can prevent) pain vs distracts while switched on.
- **Cognitive redefinition vs biochemical**: similarity: both reduce pain by closing the gate (thoughts from the brain; drugs blocking signals); differences: no side effects vs side effects; the patient must make an effort vs a passive pill; takes practice vs works fast.
- **Psychological vs alternative**: psychological uses only the mind; alternative uses physical stimulation (needles, electricity).
- **McGill vs Wong-Baker**: four parts vs one; location (body diagram) and quality (words) vs intensity only; some qualitative answers vs a number 0–10; words to choose vs faces to choose.

8. Define a type of pain or a pain term (7 questions)

Two marks: the definition (1) and a detail or **example** (1).

- **Chronic**: lasts a long time, months or years (more than 3 months) (1); for example arthritis (1).
- **Acute**: sudden, short-lived, a clear cause (1); for example a broken arm (1).
- **Organic** (older): has a physical cause rather than a psychological one (1); from injury, pressure or tissue damage (1). Describing acute or chronic pain, or phantom limb pain, scores 0.
- **Psychogenic** (older): no physical cause, psychological in origin (1); for example phantom limb pain (1). It is not "inherited".
- **Pain** itself: an unpleasant sensation and emotional experience (1) linked to damage to the body (1).

9. Recall the key study by Brudvik et al. (2 questions)

Paper 4 Question 5 [10].

- **The children's scales**: 3–8 years: FPS-R (or Wong-Baker), six faces scored 0–10 (2 for name and detail); 9–15 years: CAS or VAS, a line from no pain to the most pain, coloured on the CAS.
- **Conclusions** (not results, and not your own ideas): doctors significantly underestimate children's pain for all conditions, especially wounds, infections and soft tissue injuries; doctors' ratings improve as pain gets worse, but only about half of children in severe pain get pain relief; doctors should use children's self-ratings and parents' ratings. A result (the 3.2, 4.8 and 5.5 means) can support a conclusion for the second mark but is not a conclusion itself.
- **Weaknesses of research on pain with children**: may not understand instructions, may not be able to describe their pain, may not use the right to withdraw or understand a debrief. Each must be tied to **pain** ("so can't say how much the cut hurts").

10. Apply an issue or debate to a pain theory (2 questions)

(a) define the debate (2); (b) a strength or weakness of the theory from one side (2).

- **Nature versus nurture:** how far behaviour comes from inborn, genetic factors (nature) or from the environment and learning (nurture).
- **A nurture strength of gate control theory:** the gate can be closed by **learned** techniques (non-pain imagery, attention diversion), so patients can be taught to control their pain: a good application to everyday life, and more holistic than specificity theory. Children learn how much to show pain from how their carers react (1 for the point, 1 for the detail).

Worked examples

Example 1

Lena has sprained her ankle playing netball. She does not want to take painkillers.

(a) Outline **stimulation therapy/TENS** as a way of managing pain. [2]

(b) Suggest **one psychological** treatment Lena could use to manage the pain of her ankle. [2]

(c) Explain **two strengths** of using TENS to manage pain. [4]

(a) Electrodes are stuck to the skin near the painful area and a small unit sends mild electrical pulses through them, which the person controls themselves (**B1**). The tingling acts as a counter-irritation that distracts from the stronger pain and stimulates large nerve fibres, closing the pain gate in the spinal cord and possibly releasing endorphins (**B1**).

(b) Non-pain imagery (**B1**): while her ankle throbs, Lena could close her eyes and imagine a scene that is incompatible with the pain, such as soaking her feet in a cool, calm lake, so her mind is filled with something other than the pain of the sprain (**B1**).

(c) It involves no drugs (**B1**), so Lena would avoid the side effects of painkillers, such as an upset stomach, and there is no risk of addiction if she uses it for weeks while the sprain heals (**B1**).

It is self-administered (**B1**): Lena can use it at home whenever her ankle hurts and turn the pulses up or down herself, so she feels in control of her pain instead of waiting for a practitioner (**B1**).

Example 2

Mr Osei is recovering in hospital after an operation on his back. A nurse uses the UAB pain behaviour scale to rate his pain every day.

(a) Identify **two** behavioural categories from the UAB pain behaviour scale, other than verbal vocal complaints. [2]

- (b) On Monday the nurse rates him: verbal complaints, facial grimaces and body language **frequent**; non-verbal complaints, down time, mobility, stationary movement and medication **occasional**; standing posture and use of support equipment **none**. Calculate his UAB score. [2]
- (c) Explain **one** reason why rating him every day for three weeks is useful. [2]
- (d) Explain **one** weakness of the UAB pain behaviour scale for measuring Mr Osei's pain. [2]
- (a) Facial grimaces (**B1**); use of visible support equipment, such as crutches (**B1**).
- (b) Frequent scores 1, occasional $\frac{1}{2}$, none 0 (**B1**). Score = $3 \times 1 + 5 \times \frac{1}{2} + 2 \times 0 = 3 + 2.5 = 5.5$ out of 10 (**B1**).
- (c) It is a longitudinal measure, so the nurse can see whether his pain behaviour is going down day by day (**B1**); if his score stays high after the operation, the doctor knows to change or increase his pain medication (**B1**).
- (d) The nurse might misinterpret his behaviour (**B1**): Mr Osei may lie down a lot because he is tired after the operation rather than in pain, so his down-time score would overestimate his pain and he could be given more medication than he needs (**B1**).

Example 3

- (a) Describe what psychologists have discovered about managing and controlling pain. [6]
- (b) Evaluate what psychologists have discovered about managing and controlling pain, including a discussion of determinism versus free will. [10]

(a) *Biochemical*. Peripherally acting analgesics such as aspirin and ibuprofen work at the site of the injury, reducing the chemicals that make nerve endings sensitive; centrally acting analgesics such as morphine act on the brain and spinal cord, like the body's own endorphins; local anaesthetics block signals from one area, as a cream or an injection before a tooth is taken out.

Psychological. Cognitive strategies send messages from the brain that close the pain gate: attention diversion (passive, such as watching television, or active, such as counting backwards), non-pain imagery (imagining a scene incompatible with pain, such as a cool lake) and cognitive redefinition (replacing "I can't bear this" with "this will pass and I can cope").

Alternative. Acupuncture: 5 to 20 fine needles inserted along meridians and left for 10 to 20 minutes, said to restore the flow of qi and thought to release endorphins. TENS: electrodes on the skin deliver mild pulses that the patient controls, distracting from the pain and closing the gate.

Why it reaches the top level: all three kinds, each with named examples and **how** it reduces pain, linked to gate control theory.

(b) *Determinism versus free will (the named issue)*. Biochemical treatment is the most deterministic: a dose of morphine blocks pain signals whatever the patient thinks, which is why it works for severe pain. Cognitive strategies depend on free will: the patient chooses to divert attention or rethink the pain, and they only work if

the person practises and believes they can control it. TENS sits between: the electrical pulses act on the nerves automatically, but the patient decides when and how strongly to use it. Even drugs involve some choice, since patients decide whether to take them.

Reductionism versus holism. Drugs treat pain as signals in nerves, which ignores the fear and low mood that come with chronic pain; cognitive strategies are more holistic because they work on thoughts and feelings, and are often combined with drugs.

Application to everyday life. Analgesics are quick and easy, but have side effects such as stomach upset, and opiates cause tolerance and addiction. Cognitive strategies cost nothing, have no side effects and can be used anywhere, but are hard to use when pain is severe.

Cultural differences. Acupuncture is a long-standing treatment in China, but patients raised on Western medicine may doubt it and refuse needles, and part of its effect may be placebo.

Overall, the most effective approach combines them: biochemical treatment for severe acute pain, and techniques that use the patient's own control, such as TENS and cognitive strategies, for long-term pain, where drugs are riskiest.

Why it reaches the top level: the named issue first, applied to each treatment with reasons; further issues with examples; a reasoned judgement.

Common mistakes

- **Treatments of the wrong kind:** giving "take painkillers" when a psychological treatment is asked for, or attention diversion when an alternative or biochemical one is asked for, scores 0 (March 2026 report; mark schemes 2024).
- **Not applying a suggestion:** a cognitive strategy for toothache must mention the toothache; "acupuncture involves needles" is too thin to outline it (March 2026 report).
- **Generic weaknesses:** "there are cultural differences" without saying how they affect acupuncture, or "children may not understand instructions" without tying it to describing their pain, earns at most 1 (March 2026 and March 2025 reports).
- **Calling acupuncture a stimulation therapy:** stimulation therapy means TENS (March 2025 report).
- **Acute instead of chronic** (or the other way round) in a plan or a suggestion: answer the kind of pain the question names (March 2025 report).
- **Results instead of conclusions** for Brudvik et al.: the mean ratings are results; "doctors significantly underestimate children's pain" is a conclusion (March 2025 report).
- **Using the UAB as "not a rating scale":** it is a rating scale; only its observed behaviours (grimacing, limping) count as a non-rating-scale measure (March 2025 report).
- **Ignoring the named method or treatment in a plan:** using questionnaires in a controlled observation, TENS in a mirror treatment plan, or not knowing what phantom limb pain is (March 2026 report).
- **"Facial expressions"** for a UAB category: write **facial grimaces** (June 2021 report).
- **Cognitive redefinition is not imagery;** it changes the thoughts about the pain (June 2021 report).

- **Organic pain:** describing acute or chronic pain, or phantom limb pain, instead of "pain with a physical cause" (June 2023 report).
- **Faces scales:** wrong range or labels, children "colouring in" the faces (that is the PPQ), or saying it is for children under 3 (June 2023 report).
- **Describing too many measures superficially** in an essay, or describing theories in a "measuring" essay (November 2021 report).
- **Naming an issue without explaining it:** "acupuncture is deterministic" with no reason or example stays in Level 1 (June 2022 report).
- **The MPQ for children:** it scores 0, as it is too complex for them (March 2023 report).

How to get the marks

- **"Identify":** one exact word or phrase each: "down time", "facial grimaces".
- **"Outline", "explain what is meant by":** the idea plus a detail or example; 2 marks need both.
- **"Suggest"** in a scenario: the treatment or measure named, then applied to **this** person and **this** pain (Omar's chest pain, Becky's broken leg, a toothache).
- **"Explain" a strength or weakness:** the point (1), then why it matters for this treatment, measure or patient (1). Two answers must be genuinely different.
- **Brudvik et al.:** conclusions from the study itself; the scales by age group.
- **Essays:** (a) every part the question names, with detail of how things work; (b) the named issue first, issues applied to (a), then a judgement.
- **"Discuss ... include a conclusion"** and **"to what extent":** both sides, then a decision reached by reasoning, not a summary.
- **Plans:** the named method, treatment and features; then knowledge from this topic that you actually **use** in the plan, and reasons tied to your own choices.

Quick check

1. Name the **three** kinds of treatment for pain and give one example of each.
2. A patient marks a 100 mm visual analogue scale at 72 mm before treatment and at 45 mm after a week of TENS. By how many millimetres did the score fall, and what percentage decrease is this?
3. A child is rated on the UAB scale: 4 behaviours frequent, 4 occasional and 2 none. What is the score out of 10?
4. In Brudvik et al. (2016), the mean ratings were doctors 3.2, parents 4.8 and children 5.5. By how much did the doctors' mean fall below the children's, and the parents' below the children's?
5. Which theory of pain, specificity or gate control, explains each? (a) A footballer with a broken toe feels little pain until the match ends. (b) Rubbing a banged elbow makes it hurt less. (c) A deeper cut sends more pain signals to the brain.

Answers

1. **Biological (biochemical)**: aspirin, morphine or a local anaesthetic. **Psychological**: attention diversion, non-pain imagery or cognitive redefinition. **Alternative**: acupuncture or TENS.
2. $72 - 45 = 27 \text{ mm}$; $\frac{27}{72} \times 100 = 37.5\%$ decrease.
3. $4 \times 1 + 4 \times \frac{1}{2} + 2 \times 0 = 6$ out of 10.
4. $5.5 - 3.2 = 2.3$ points below; $5.5 - 4.8 = 0.7$ points below.
5. (a) **Gate control**: attention on the match sends messages from the brain that close the gate. (b) **Gate control**: touch (large fibres) closes the gate. (c) **Specificity** (more damage, more pain), though gate control accepts this too.

Past questions to try

- 9990/42/F/M/24 Q6: mirror treatment, a biochemical treatment for phantom limb pain, strengths of mirror treatment.
- 9990/43/M/J/25 Q6: UAB categories, a psychological treatment for acute pain, weaknesses of observational measures.
- 9990/33/M/J/24 Q11: two alternative treatments for a broken leg, and a weakness of one.
- 9990/42/F/M/26 Q11: planning a controlled observation of mirror treatment for phantom limb pain.