

How Cartilage Works (and Why It Struggles to Heal)

Cartilage is the smooth, glistening surface that caps the ends of the bones inside a joint. It is one of the most remarkable materials in the body: slipperier than ice, able to cushion a lifetime of loading, and yet unlike bone and tendon it has almost **no ability to repair itself**. That single fact explains why cartilage damage and osteoarthritis are such stubborn problems, and why protecting your cartilage matters so much. This page explains, in plain language, what cartilage is and why it heals so poorly, then for the curious goes deeper into the beautiful engineering of this tissue and the active biology behind what we casually call “wear and tear”.

What cartilage is and what it does

The cartilage we mean here, **articular cartilage**, is the firm, smooth, white coating just a few millimetres thick on the ends of bones where they meet in a joint. It does two things superbly:

- It is a **near-frictionless gliding surface**, so the bones of a joint slide over each other with almost no resistance.
- It is a **cushion**, spreading load across the joint and protecting the bone underneath from impact.

Cartilage is living tissue, but an unusual kind: it has **no blood vessels and no nerves**. The lack of nerves is why a worn cartilage surface itself doesn't hurt (the pain of arthritis comes from other structures). The lack of a blood supply is the key to its great weakness: it cannot heal the way skin or bone can.

Why cartilage struggles to heal

Almost everywhere else in the body, healing begins with bleeding: a clot forms, inflammatory cells arrive, and growth factors switch on repair. Cartilage has no blood supply, so an injury to it gets none of that. On top of that, its few resident cells are trapped in the surrounding material and cannot crawl to a wound to patch it.

The result is that a scrape or crack confined to the cartilage tends to simply stay there. Damage that goes deeper (through the cartilage and into the bone beneath) can fill in, but with a **scar-like “fibrocartilage”** that is weaker and less durable than the original. So cartilage damage tends to be permanent and slowly progressive, which is exactly why prevention and protection count for so much.

What helps protect your cartilage

- **Keep moving.** Cartilage is fed by joint fluid that is pumped in and out as you move; regular, comfortable activity nourishes it, while long periods of inactivity starve it.
- **Keep a healthy weight.** Every kilogram is extra load through the joint surfaces.
- **Build the muscles around the joint.** Strong muscles share the load and absorb shock, protecting the cartilage.
- **Look after injuries.** A wobbly or unstable joint wears its cartilage faster; treating instability protects the surface.

See also

- [Osteoarthritis](#) – what happens when cartilage breaks down across a joint
- [How bone heals and remodels](#) – the subchondral bone that lies beneath cartilage
- [Staying active for joint health](#) – why movement protects your joints
- [Weight, obesity and joint health](#) – how load affects cartilage