

Intervertebral disc degeneration treatment

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Conservative therapies and surgical treatments for [Intervertebral disc degeneration](#) provide only symptomatic [pain relief](#) without promoting [intervertebral disc regeneration](#). Therefore, the clinical demand for disc regenerative therapies for [intervertebral disc repair](#) is high.

There are several treatment options available, including:

Physical therapy: Physical therapy can help strengthen the muscles that support the spine and improve flexibility. It can also teach patients proper posture and body mechanics to reduce strain on the discs.

Pain medications: Over-the-counter pain medications like ibuprofen or acetaminophen can help manage mild to moderate pain. In some cases, prescription pain medications or muscle relaxants may be necessary.

Steroid injections: Steroid injections can be used to reduce inflammation and pain in the affected area. These injections are typically administered by a pain management specialist.

Surgery: In severe cases where conservative treatments have failed, surgery may be necessary. The most common surgical procedures for intervertebral disc degeneration include discectomy, laminectomy, and spinal fusion.

Alternative therapies: Alternative therapies like chiropractic care, [acupuncture](#), and [massage](#) may provide some relief from back pain. However, there is limited scientific evidence to support their [effectiveness](#).

Shape-memory collagen scaffold

Koo et al. used a [rat tail nucleotomy model](#) to develop mechanically stable collagen-[cryogel](#) and [fibrillated collagen](#) with shape-memory for use in [minimally invasive surgery](#) for effective treatment of IVDD. The collagen was loaded with [hyaluronic acid](#) (HA) into a rat tail nucleotomy model.

The shape-memory collagen structures exhibited outstanding [chondrogenic](#) activities, having completely similar physical properties to those of a typical shape-memory alginate construct in terms of water absorption, compressive properties, and shape-memorability behavior. The treatment of rat tail nucleotomy model with shape-memory collagen-cryogel/HA alleviated mechanical allodynia, maintained a higher concentration of water content, and preserved the disc structure by restoring the matrix proteins.

According to these results, the [collagen](#)-based structure could effectively repair and maintain the [Intervertebral disc matrix](#) better than the controls, including [hyaluronic acid](#) only and shape-memory alginate with [hyaluronic acid](#) ¹⁾.

Discogenic pain treatment

see [Discogenic pain treatment](#).

¹⁾

Koo YW, Lim CS, Darai A, Lee J, Kim W, Han I, Kim GH. Shape-memory collagen scaffold combined with hyaluronic acid for repairing [intervertebral disc](#). Biomater Res. 2023 Mar 29;27(1):26. doi: 10.1186/s40824-023-00368-9. PMID: 36991502.

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