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Virtual Reality Effective at Treating Chronic Pain

A systematic review and meta-analysis from China found that virtual reality (VR) based interventions for chronic lower back pain are more effective than standard physical therapy. A meta-analysis is a type of study that uses statistical techniques to combine the results from multiple studies while accounting for variations in methodology and potential biases.

For this analysis, the researchers identified randomized controlled trials published before January 2025 that included an experimental group that received a VR based intervention, a control group that received physical therapy, and at least one of several quantitative outcome measures such as pain, disability, inflammatory markers, or lower back muscle size. Their review identified 15 such studies which combined included over 700 participants. A typical VR intervention might involve a combination of immersive physical exercises, pain management skills, and even biofeedback.

When they combined the results of the fifteen studies, they found that the VR based interventions were significantly better in terms of reducing both pain and disability than traditional physical therapy. Interestingly, interventions that were high frequency (3 times per week or more) and shorter in duration (4 weeks or less) were the most effective. In addition to the patient reported improvements, the study also found that the VR interventions were more effective in lowering inflammatory blood markers and in increasing the size of lower back muscles.

The effectiveness of the VR interventions is believed to be due to the distracting effect that sensory immersion can have on the brain. In addition, VR programs have been shown to activate the brain's reward systems. The authors believe that high frequency, short duration VR interventions may be able to rewire the brain away from chronic pain. However, they also stress that it is not clear how long the effects of these interventions last for and that much more research is needed to fully understand and optimize them.

It would be very interesting to see if a similar VR based program would have a positive effect on the chronic pain that afflicts so many Chiari patients.

Source: Huang G, Chen W. Therapeutic effects of virtual reality technology on chronic low back pain. *Medicine (Baltimore)*. 2025;104(45):e45867. doi:10.1097/MD.0000000000045867

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