



Bardavon Recovery App Lower Back Program Reduced Back Pain by 35% and Improved Disability from Home

Back pain sufferers that used the Bardavon Recovery App 10-week digital program reported a 35% reduction in pain.

Introduction: The Back Pain Problem in America

[30% of Americans](#) suffer from acute back pain on any given day, with 16 million [experiencing chronic back pain](#). Statistically speaking, [80% of people](#) will experience back pain throughout their lifespan—and these numbers are on the rise.

[A 2018 study noted](#) that disability from back pain has doubled over the last 30 years. Back pain is at [epidemic levels](#) in the United States and is officially a public health problem.

Why is the Back So Vulnerable?

The back is an assemblage of bones, ligaments, muscles, tissue, and joints. It's possible to pull, strain, bruise, break or rupture the various parts. The complex structure of the back contributes to the multifaceted causes of back pain.

While general aging is a common culprit of back injury and pain, so are other factors like: excess weight, inactivity, [workplace sitting](#), [wheelchair use](#), [smoking](#), poor nutrition, lifting, incorrect posture, extreme athletics, accidents, arthritis, organ damage, loss of blood, frail bones, body height, stress, mental health and genetics—and this isn't even an exhaustive list.

The number of factors that contribute to and cause back pain spotlights the diagnostic dilemmas for healthcare providers. As scientists from the [Lancet Low Back Pain Series Working Group note](#), “only a small proportion of people have a well understood pathological cause.”

In other words, the cause of back pain is often unknown and isn't straight-forward. Without an identified pathological cause, linear traditional treatment can fall short. There is an increasing agreement that [pain-management programs](#) should be multidisciplinary in nature.

As such, comprehensive back pain treatment should be multidisciplinary in nature, addressing all of the proven factors that contribute to pain and injury.

Profile of a Back Pain Sufferer

Back pain does not discriminate. An examination of the demographics of back pain sufferers shows the range and diversity—as well as the prevalence. Back pain affects the young and old, active and inactive, those who are generally healthy, and also those who have other comorbidities.

The majority of acute back injuries are caused by mechanical movements—lifting, bending, pulling, the rigors of body labor. Repetition of movement also wears and tears the back, causing [accumulative stress](#) and deterioration. Inactivity combined with poor posture are also back pain culprits putting more pressure on disks than there would be simply standing.



With back pain, psychosocial distress is common, leading to fear of movement which can cause muscles to weaken, risking further disability. Anxiety, depression, and isolation are typical in chronic back pain.

Demographics of Back Pain Sufferers in the United States:

Age

- 72% of sufferers are 18-64
- Patients 45-64 have the most hospital visits due to back pain
- People under 45 have majority of back injuries due to more activity

Gender

- Women account for 55% of all cases

Chronic Back Pain Sufferers

- More likely to be socioeconomically disadvantaged
- More likely to have depression and sleep disturbances
- Have a highest prevalence between 50-60 years of age

Why Traditional Back Pain Treatment isn't Enough

Physical therapy, pharmaceuticals, and surgery have been the traditional response to back pain. While these conservative and invasive treatments can be effective, it's been proven that multidisciplinary treatments are [more therapeutic and cost-effective](#). With isolated, traditional treatments, patients don't get well-rounded end-to-end care. Instead of whole-person care, they get siloed, narrowed treatment that may not address all of the underlying factors contributing to their back pain or condition.

Physical Therapy

Physical therapy (PT) is a go-to for treating back pain because it's non-invasive and can be effective. While acute patient pain can be resolved in a few sessions, complex chronic pain associated with mental health concerns are not addressed. To rely exclusively on PT dismisses the multifactorial causes of back pain and potential solutions.

Pharmaceuticals

Pharmaceuticals can provide immediate relief but they prove ineffective for non-acute treatment and can be highly addictive. The majority of opioid prescriptions in the US are for back pain, and [60% of opioid users have back pain](#). Opioids are tolerance-building, do not address the root cause of pain and may cause [further medical complications](#), and even accidental overdose.

For long-term pain management, preoperative opioid use is "associated with higher medical costs, psychiatric illness, FBSS (Failed Back Surgery Syndrome), and postoperative opioid use. Even a short or moderate course of preoperative opioids was associated with worse outcomes compared with no use." – O'Donnell, et al, 2018, [Spine](#)

Surgery

When successful, back surgery can offer long-term relief, but can be high-risk. Positive outcome results are lower than other musculoskeletal surgeries. Failed Back Surgery Syndrome is the phenomenon of increased pain in areas identified pre-surgery. In some cases, "[surgery may exacerbate](#) existing symptoms or cause new symptoms by inducing spinal stenosis, spinal instability, epidural fibrosis, or disruption of adjacent discs."



Back Pain Treatment Needs to be Multidisciplinary

A well-rounded, complete back pain program should incorporate all evidence-based methods to reduce pain and disability. This means more than physical therapy, pharmaceuticals, or surgery. Multimodal back pain treatment is proven to better treat acute and chronic pain.

[A Cleveland Clinic Medical Journal study cites](#) that “Americans with low back pain have been helped to return to work by multidisciplinary intensive treatment programs...they can reduce pension expenditures, sick leave days, health care contacts, and pain.”

Bardavon’s complete back pain program is centered around the Five Pillars of Health: Physical Therapy, Nutrition, Pain & Anxiety, Health Literacy, and Environmental Preparation.

1. Physical Therapy – Body awareness, mobility, building stability, and strengthening key muscles in the back offers the foundation to overcome lower back pain. A [customized exercise program](#) for the patient’s back pain type, monitored by physical therapists and other members of the care team, is at the core of back recovery.

Virtual physical therapy sessions and daily lessons broken into bite-sized routines offer continued support, and more advanced movement monitoring and compliance adherence.

2. Nutrition – Nutrition is often an overlooked tool and factor in back pain reduction. Weight loss may be important for reducing pain and lowering surgery-day risk (if required). When patients are guided through the foods, vitamins, and minerals that promote healing and reduce inflammation, they can recover faster. Nutrition support often leads to better health and recovery.

3. Pain & Anxiety – [Chronic back pain is often linked to depression](#), stress, anxiety, and other mental health conditions. Guidance, support, and exercise are proven to reduce anxiety and depression, while increased mindfulness is key for reducing pain and disability. Offering cognitive behavioral therapy exercises and emotional support delivers a key piece in complete biopsychosocial care.

4. Health Literacy – The more patients understand about their pain and musculoskeletal condition, the better they can curb behavior and self-monitor. An educated patient also becomes more empowered to steer outcomes and actively participate in their recovery. Medical content written in an accessible way for all patients is pivotal.

5. Environmental Preparation – Overcoming back pain means having a safe space to get better. Removing trip and fall hazards, helping with life preparations, and improving home life aids in a safer, smoother recovery from pain.

“[Bardavon] looks at the patient as a whole: their diet, level of function, mental health, social support, environmental conditions etc., and really takes all of the aspects of the human being into consideration—not just the body part.” – Dr. Soeters

A Case Study: Reducing Back Pain and Disability with the Bardavon Recovery App Back Pain Program

Bardavon and The PreHab Guys collaborated to create a whole-person back pain program with daily exercises and Five Pillar content. The 10-week paid program was offered to individual back pain sufferers. These individuals had acute, subacute or chronic pain, injuries and other secondary comorbidities.

To assess lower back pain disability, Bardavon collected data using the Oswestry Disability Index (ODI), a standardized, participant-completed questionnaire used by clinicians and researchers to quantify level of function in activities of daily living.

Bardavon Recovery App Back Pain Program

The Bardavon Recovery App Back Pain Program supports the whole person with progress tracking, guided exercises, and multidisciplinary content from Five Pillars of Health: Physical Therapy, Nutrition, Pain and Anxiety, Health Literacy and Environmental Preparation.

The Bardavon Recovery App Back Pain Program was delivered to participants via their smartphone or tablet, offered through the Apple Store and Google Play for both IOS and Android devices.

The digital back pain program duration was up to 10-weeks, offering a multi-faceted treatment with 10-15 minutes of daily, interactive activities and physical therapy exercises.

The ODI Scale

The Oswestry Disability Index ([ODI Scale](#)) is a reliable, time-tested, self-administered tool that assesses lower back pain. The scale investigates perceived pain and how it affects quality of life in 10 basic areas, such as can you walk, sleep, stand, wash up? Each question has six possible responses that measure pain, including (1) the patient can “cope with most living activities” to (6) “patients are bed-bound.” Scores are scaled on a value from 0 to 100.

Bardavon Recovery App Back Pain Program included daily content from a library of:

- 77 key exercise & movement videos
- 39 pain management & mindfulness lessons
- 26 interactive educational videos
- 17 nutritional plans & tips

Objective

The objective was to demonstrate the effectiveness of the Bardavon Recovery App Back Pain Program at reducing back pain and improving disability and daily function as compared to traditional treatment plans, including regular in-person physical therapy sessions.

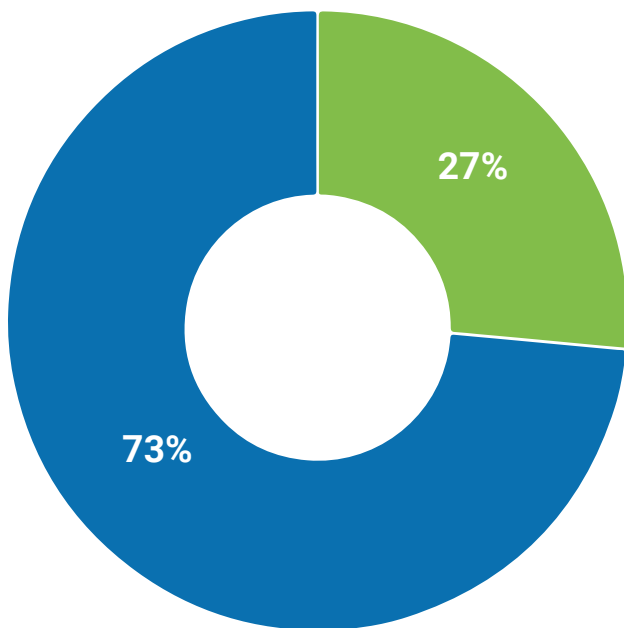
About the Participants

Each participant self-reported their Oswestry Disability Index measures throughout the program. The ODI self-assessment and participant engagement data provided an analysis of how back pain and disability was affected with digital program engagement.

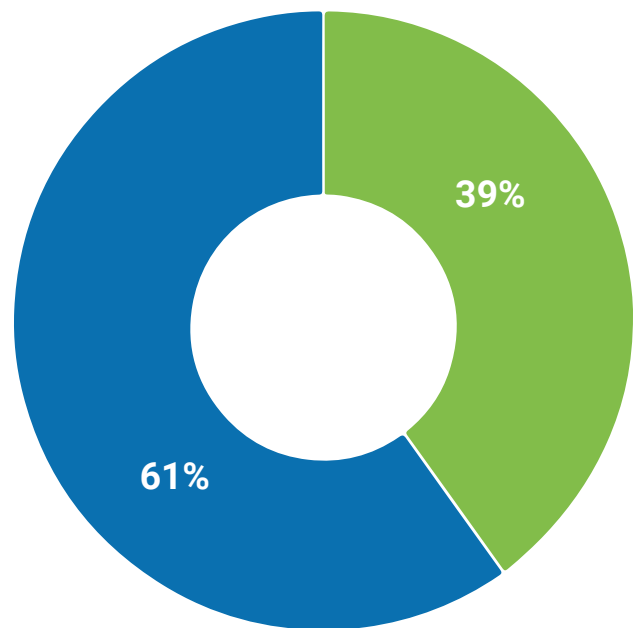
Daily pain rankings were also self-reported and recorded. The participant's who engaged in the Bardavon Recovery App Back Pain Program opted-in, had ongoing pain, and were not prescribed the program by any care provider. No insurance coverage was accepted for this individually paid and subscribed program.

The study had 41 participants, 61% male, 39% female. Ages ranged from 18 to 65 years old. The average participant age was 38.45 years old.

Participant Age



Participant Gender



Results

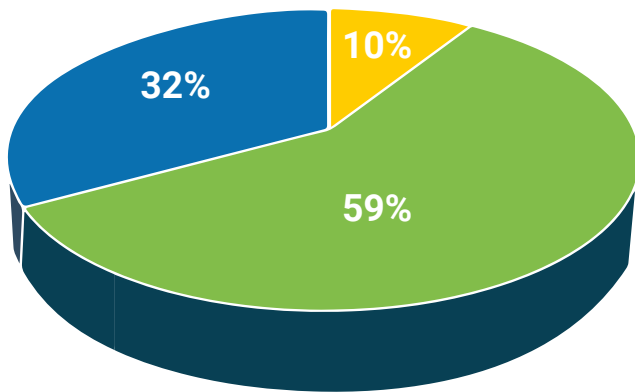
A statistical analysis demonstrated a linear decline in composite measures of back pain, indicating not only a reduction in pain, but also an improvement in functional level. 85% of participants were able to reduce their pain by an average of 35%.

More than half of participants (59% total) significantly improved their functional levels as measured by their ODI scores. This significant improvement translates to participants reporting ODI scores that lowered their disability classification by at least one level.

The average pretreatment ODI scores of participants were 26.8 ± 17.1 (range, 2 to 66), with mean post-treatment ODI scores of 16.32 ± 10.0 (range, 0 to 32) after using the Bardavon Recovery App Back Pain Program. 88% of those who demonstrated disability (ODI) improvement, did so within the first six weeks of the program. Of patient participants, 40% had measured back disability improvement within the first 3 weeks of the program. All participants of the Lower Back Program opted-in, had ongoing pain, and were not prescribed the program by any care provider.

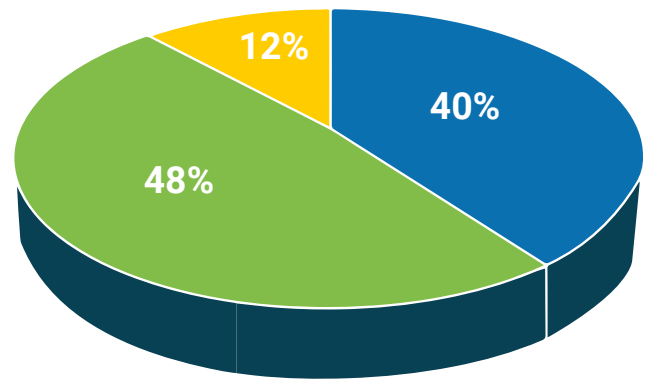
No insurance coverage was accepted for this individually paid and subscribed program.

Improvements in participant reported disability via ODI assessment



- Decreased or no improvement
- Significant improvement
- Limited improvement

Participant with significant improvement



- First 3 weeks
- 4-6 weeks
- 7+ weeks

Conclusion

Patients that opted in to the Bardavon Recovery App Back Pain Program reported a significant reduction in pain. Bardavon patients also improved their functional disability levels, lowering their ODI classification by at least one level. Of the majority of patients who reduced pain and disability, measurable improvements were captured within the first 3 weeks of their program use.

Comparatively, [a larger study of patients with chronic mechanical low back pain](#) and in-person physical therapy sessions, recorded a pre-treatment ODI score of 36.0. In addition to in-person physical therapy, these patients were offered at-home exercises. After 15 in-person physical therapy sessions (5 times a week over 3 weeks) the mean ODI score dropped to 23.8.

Without in-person physical therapy, the Bardavon Recovery App Back Pain Program was able to reduce the mean ODI from 26.8 to 16.32, with significant recorded improvement in the first 3 weeks of virtual engagement. In-person physical therapy and pain treatment is not required to address lower back pain. A digital health platform, like Bardavon’s, allows people to get better and perform physical therapy and receive multidisciplinary treatment from their home. In addition to guided physical therapy, the Bardavon Recovery App Back Pain Program addresses the multitude of factors contributing to their condition.



Participants who engaged with the Bardavon Recovery App Back Pain Program were able to reduce pain and improve daily function and disability faster than patients receiving traditional in-person physical therapy. Digital at-home pain programs offer more accessible care to patients by removing barriers of care (like transportation, time off work, and child care), while offering successful results at reduced healthcare costs.

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