

Optimizing Recovery

Evidence-based nutrition, lifestyle, and adjunct strategies for healing after injury or a procedure

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Nutrition Essentials

- Protein: aim for roughly 1.2–2.0 g/kg/day (vs. the usual 0.8 g/kg) — spread across 3–5 meals/snacks. Building block for tissue repair and immune defense.
- Branched-chain amino acids (BCAAs — leucine, isoleucine, valine): help preserve muscle mass during recovery (shown after hip fracture and tonsillectomy surgery); evidence for speeding wound closure itself is mixed.
- Vitamin C: essential cofactor for collagen cross-linking. Trials show faster healing with supplementation (~500–1,000 mg/day studied), especially when baseline status is marginal, which is common after surgery.
- Daily multivitamin/mineral: reasonable low-risk gap-filler. Zinc (15–40 mg/day, time-limited) supports re-epithelialization; vitamin D supports immune and musculoskeletal recovery; omega-3s help modulate post-surgical inflammation.
- Adequate calories (~30–35 kcal/kg/day) and hydration — under-eating causes the body to burn protein for fuel instead of using it to rebuild tissue.

Avoiding Toxins That Slow Healing

Tobacco / nicotine

- Strong, consistent evidence: smokers have significantly higher rates of nonunion and surgical-site infection. Nicotine constricts blood vessels, reducing oxygen delivery to healing tissue. Quitting even a few weeks before a planned procedure measurably improves outcomes.

Alcohol

- Even a single episode of intoxication measurably impairs healing at the cellular level. Ethanol blunts the early chemical signals (chemokines such as KC and MIP-2) that recruit neutrophils to the injury site — this reduces neutrophil migration into the wound by up to ~40% in controlled studies, delaying the inflammatory phase that repair depends on.
- Ethanol exposure also delays keratinocyte migration across the wound bed (slower re-epithelialization in the first days after injury), impairs new blood vessel formation (angiogenesis), and reduces collagen deposition — all of which lengthen recovery and raise infection risk.
- Practical takeaway: avoid alcohol entirely in the days immediately before and after a procedure or significant injury, and minimize it throughout active healing. Reducing your exposure to toxins like alcohol has been shown to have far-reaching overall health benefits as well.

THC / cannabis

- Although overuse of any substance is generally counterproductive for behavioral health, general health, and healing, moderate use of THC products does not appear to interfere with our results.
- Heavy cannabis use, however, is associated with lower bone density and higher rates of nonunion/malunion after orthopedic procedures.
- If cannabis is used for symptom control, discuss route and timing with your surgeon.

Adjunct Physical Modalities

Red / near-infrared light (photobiomodulation)

- Reasonably good evidence, especially for skin and superficial wounds: red light (~620–660 nm) and near-infrared light (~780–950 nm) are absorbed by mitochondrial enzymes, increasing cellular energy (ATP) production and stimulating fibroblast activity, collagen deposition, and new blood vessel formation.
- Clinical and scoping reviews support benefit for wound closure speed, scar quality, and tendinopathy recovery (particularly combined with exercise). Higher-quality human trials are still needed for many applications, but the safety profile is favorable.

Ice vs. heat — let evidence guide, not habit

- Ice: reliably reduces pain and swelling short-term, but current evidence does not show that it speeds tissue healing — some research suggests prolonged or aggressive icing may blunt the natural inflammatory signals repair depends on. Reasonable use: brief icing (10 minutes or less) mainly for pain control in the first 48–72 hours, not as a healing accelerant.
- Heat: increases local blood flow and metabolic rate, which can support healing once the acute swelling phase has passed, and helps with stiffness and range of motion — generally better used after the first 48–72 hours, not immediately after an acute injury.
- Current thinking ("POLICE" — Protection, Optimal Loading, Ice for pain, Compression, Elevation) emphasizes controlled movement over prolonged rest or icing — inflammation is a necessary, not optional, part of repair.

Physical therapy

- Physical therapy will almost always be part of your ultimate treatment plan, but it is important not to start aggressive physical therapy too early. Talk to Dr. Mulvaney about when you should start physical therapy for your injury.

Movement, Sleep, and Mindset

Stay appropriately active

- Early, gentle mobilization (as cleared by your care team) reduces complications, preserves muscle and function, and speeds functional recovery compared with prolonged rest — a consistent finding across enhanced-recovery-after-surgery (ERAS) protocols.
- Cross-training around an injury — working uninvolved muscle groups and maintaining light cardiovascular activity as tolerated — helps preserve overall conditioning and mood without stressing the healing area.

Sleep

- Sleep is when growth hormone is released and much of tissue repair occurs. Experimental sleep restriction directly delays skin barrier recovery and blunts local immune response; clinical studies link poor sleep to slower surgical recovery. Prioritize 7–9 hours, especially in the first 1–2 weeks after injury or surgery.

Calm mind / stress management

- This is not just "soft" advice — classic controlled studies (Kiecolt-Glaser et al.) found that standardized wounds healed measurably slower under chronic stress (caregiving, marital conflict, exam stress), and healing after a stressful marital argument was delayed by roughly a full day compared to a supportive conversation.

- Mechanism: stress hormones (cortisol) suppress inflammatory signaling and immune cell migration to the wound — very similar, at the level of tissue biology, to the way alcohol impairs the same processes. Simple practices — brief daily relaxation, breathing exercises, adequate social support — have measurable, evidence-backed benefit for healing speed.

General education only — not a substitute for individualized medical advice. Discuss supplements, cannabis use, and activity restrictions with your physician, especially with kidney/liver disease, anticoagulant use, or pregnancy.

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