

# Surprise: Scientists discover that inflammation helps to heal wounds

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A new research study published in The *FASEB Journal* may change how sports injuries involving muscle tissue are treated, as well as how much patient monitoring is necessary when potent anti-inflammatory drugs are prescribed for a long time. That's because the study shows for the first time that inflammation actually helps to heal damaged muscle tissue, turning conventional wisdom on its head that inflammation must be largely controlled to encourage healing.

These findings could lead to new therapies for acute muscle injuries caused by trauma, chemicals, infections, freeze damage, and exposure to medications which cause [muscle damage](#) as a side effect. In addition, these findings suggest that existing and future therapies used to combat inflammation should be closely examined to ensure that the benefits of inflammation are not eliminated.

"We hope that our findings stimulate further research to dissect different roles played by [tissue inflammation](#) in clinical settings, so we can utilize the positive effects and control the negative effects of tissue inflammation," said Lan Zhou, M.D., Ph.D., a researcher involved in the work from the Neuroinflammation Research Center/Department of Neurosciences/Lerner Research Institute at the Cleveland Clinic in Ohio.

Zhou and colleagues found that the presence of inflammatory cells (macrophages) in acute [muscle injury](#) produce a high level of a growth factor called insulin-like growth factor-1 (IGF-1) which significantly increases the rate of muscle regeneration. The research report shows that

muscle inflammatory cells produce the highest levels of IGF-1, which improves muscle injury repair. To reach this conclusion, the researchers studied two groups of mice. The first group of mice was genetically altered so they could not mount inflammatory responses to acute injury.

The second group of mice was normal. Each group experienced muscle injury induced by barium chloride. The muscle injury in the first group of mice did not heal, but in the second group, their bodies repaired the injury. Further analysis showed that macrophages within injured muscles in the second group of mice produced a high level of IGF-1, leading to significantly improved muscle repair.

"For wounds to heal we need controlled inflammation, not too much, and not too little," said Gerald Weissmann, M.D., Editor-in-Chief of The [FASEB Journal](#), "It's been known for a long time that excess anti-inflammatory medication, such as cortisone, slows wound healing. This study goes a long way to telling us why: insulin-like growth factor and other materials released by [inflammatory cells](#) helps wound to heal."

**More information:** Haiyan Lu, Danping Huang, Noah Saederup, Israel F. Charo, Richard M. Ransohoff, and Lan Zhou. Macrophages recruited via CCR2 produce insulin-like growth factor-1 to repair acute skeletal muscle injury FASEB J. [doi:10.1096/fj.10-171579](https://doi.org/10.1096/fj.10-171579)

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