

PREHAB: GETTING ATHLETES READY TO PLAY. IS LASER PART OF YOUR PRECONDITIONING PROGRAM?

Mark Callanen, PT, DPT, OCS

Prehab is a concept more and more athletic trainers are embracing to help minimize injuries on the field and reduce pain and soreness after events. Prehab is defined as: any program or training designed to prevent sports injury.¹ Outside of physical activity and/or manual treatments to “warm up” athletes, some rehab professionals are turning to modalities to help with this process.

Ideally, a well-suited modality for this concept would help improve blood flow to tissues and maximize ROM before exercise commences. But what if that modality could also help improve endurance and power output while reducing delayed onset muscle soreness (DOMS) afterwards? Seem too good to be true? Believe it or not, therapy lasers that help

promote photobiomodulation (PBM) have the ability to accomplish all these things when applied correctly.²

Most athletic trainers understand that PBM helps improve blood flow to tissue through its ability to promote vasodilation via nitric oxide release.³ However, it is lesser known that high-power lasers can quickly reduce pain via the impact they have on afferent nerves in the periphery.⁴ This analgesic quality can help reduce muscle guarding and make stretching and ROM activities much easier to perform prior to competition.

PBM helps promote ergogenic effects on muscle tissue when applied before activity via preconditioning, which is defined as: a technique of conditioning or influencing a

person (or tissue) by exposing it to stimuli prior to the relevant behavioral situation.⁵

When laser is applied to muscle tissue prior to activity, muscular fatigue and biochemical stress during and after strenuous exercise is reduced.^{2,6,7} This is accomplished through the laser’s ability to improve cellular oxygen utilization via stimulation of the electron transport chain which leads to increased production of ATP.⁸ This helps modulate reactive oxygen species (ROS) which protects eukaryotic cells from physiological stress.^{2,6}

This metabolic enhancement has been shown not only to have ergogenic benefits but can also help manage DOMS following the event.² A 2013 review study on the topic from the University of Florida concluded that PBM delayed the onset of fatigue, reduced the fatigue response, improved post-exercise recovery, and protected cells from exercise-induced damage.⁹

Similar findings have been made in other studies looking at DOMS with regard to the rotator cuff muscles. Preconditioning the throwing muscles at least 30 minutes before the activity improves muscle performance and endurance during the event.^{10,11}

As a result, laser application is becoming more common in athletic training rooms for pre and post rehab management of throwing shoulders. Athletic trainers utilizing laser therapy often supplement their prehab programs by also applying laser after events. This maximizes its potential benefits regarding the management of inflammation, increasing circulation, and promoting tissue repair.⁸

If you have not experienced high-power laser therapy, it may be worth investigating. It is a proven tool that can help maximize muscle performance and reduce DOMS when applied before competition for a variety of athletic populations.

References for this article are available upon request by emailing baileyb@litecure.com

