Injured muscles 'shocked' back to health

6 July 2016

A recent study in rats suggests that acoustic shock waves could speed up a muscle's healing process. This technique could help injured athletes to return to training and be able to compete more quickly than just with traditional methods.

Applying low-frequency shock waves in a therapy called Extracorporeal Shock Wave Therapy (ESWT) is already a promising technique for injuries like ligament and tendon damage. Dr Angela Zissler, leader of the study at the University of Salzburg, Austria, explains: "To our knowledge, there are no experiments exploring the benefits of ESWT in muscle damage, one of the most common causes of injury in competitive sports. By accelerating the muscle healing process, ESWT could get athletes back in the game faster after injury."

ESWT works by mechanically stimulating the tissue, which recruits stem cells to kick-start repairs. "The detailed cellular and molecular processes activated by ESWT have been unclear," says Dr Zissler. "Our study indicates that shock waves increase the levels of chemical signaling factors in muscle tissue. These factors wake up 'satellite' progenitor cells which gradually become new muscle fibres."

In a low-energy ESWT session, probes deliver shock waves to the patient's damaged area at a low frequency (roughly 1 pulse per second). The shock waves focus a small amount of energy (less than 0.2 mJ/mm^2) on the damaged area, without the need for using local anaesthetics.

ESWT has good potential as a non-invasive therapy complementing or supplementing existing recovery regimes. Dr Zissler remarks: "This therapy only needs sessions of around 15 minutes, so easily complements traditional practices such as physiotherapy. Another bonus is that there are no side-effects to low-energy ESWT, unlike some other methods."

This poster will be presented by Dr Angela Zissler (University of Salzburg, Austria) at the annual meeting of the Society for Experimental Biology (SEB) in Brighton on Wednesday 6 July 2016.

Provided by Society for Experimental Biology