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Therapy of the extracellular matrix

Use in muscle injuries

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In competitive sports we are always looking for science-based and permitted therapy concepts. In this context we apply successfully the Extrazell® concept since more than 4 years for treatment of ECM, shortly matrix therapy, to our athletes.

The cells of our body are embedded structurally and functionally in the complex extracellular matrix, also named interstitial (intermediate cell area). These extracellular space serves the supply of nutrients and the dissipation of final metabolic waste products. The hormonal regulating, vegetative regulation and the immune response occur also across this space. The metabolic process in the interstitial is regulated



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not only by diffusion, but also through micro-circulation, that depends highly on intact skeletal muscles in this space. Muscular injuries cause their natural vibration behaviour to be disturbed, leading across others to a congestion of metabolite, which can induce to a local hyperacidity with pre-inflammatory transformation. Cytokine and other inflammation mediators grow mature in the morbidly changed extracellular matrix and interfere the basic regulatory system. Due to decreased cell metabolism with insufficient ATP formation, an energy deficit within the affected cells is induced.

Practical use

These theoretical basics guided us to biomechanical stimulation/matrix therapy, which became an important component of our overall strategy in case of muscular injuries. The externally introduced oscillation must conform to the biological oscillation patterns, in order to achieve a positive effect. The frequency range is in-between 8–30 Hz with an amplitude of 0.1–5 mm. Higher frequencies could cause in this context a negative impact. If no structural muscular injuries are present we immediately begin the matrix therapy after first aid and the accurate diagnosis have been provided. First we use 10 Hz for 10 minutes in



Udo Buchholzer - treatment with Extrazell battery support BMS Matrix device

longitudinal direction of the muscle fibres, by applying moderate pressure. Afterwards a deep effective and water filtered infrared-A-radiation is performed for 10 minutes. Then a running training is carried out under strict observation of the pain limit for also 10 minutes. Every single therapy session takes therefore about 30 minutes. 5 sessions daily should be planned, each session separated by taking a rest of at least 30 minutes. Additionally circuit alternative training and a training of non-injured muscle groups while observing of the pain limit. If structural muscular injuries are present we begin the matrix therapy as outlined above just 3 days later, in order to avoid causing any secondary bleeding and not to interrupt the primer healing process. The period before belongs first of all to acute measures, immobilized bandage, lymphatic drainage and massages of surrounding muscles.

Conclusion

In summary it can be observed, that the downtime is reduced through consistent application of matrix therapy and the recurrences rate is decreased significantly. Important to muscle injuries is the consistent and systematic implementation of the therapeutic measures, while observing the pain limit.