

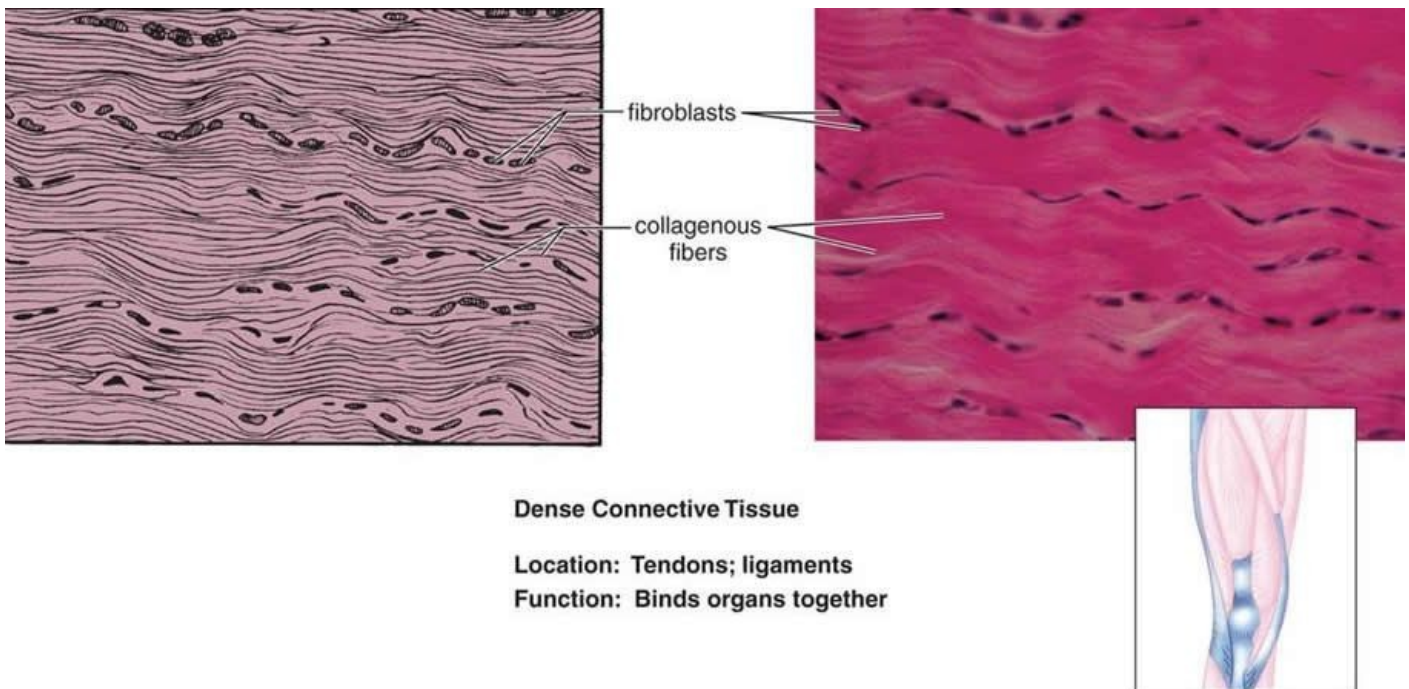
Medical PEMF Studies



Email Info@cell2n.com
Website www.cell2n.com

TENDONITIS

In vitro functional response of human tendon cells to different dosages of low-frequency pulsed electromagnetic field.



1. Knee Surg Sports Traumatol Arthrosc. 2014 Jun 24. [Epub ahead of print]

de Girolamo L(1), Viganò M, Galliera E, Stanco D, Setti S, Marazzi MG, Thiebat G, Corsi Romanelli MM, Sansone V.

Author information:

(1)Orthopaedic Biotechnology Laboratory, IRCCS Istituto Ortopedico Galeazzi, Via R. Galeazzi, 4, 20161, Milan, Italy, laura.degirolamo@grupposandonato.it.

PURPOSE: Chronic tendinopathy is a degenerative process causing pain and disability. Current treatments include biophysical therapies, such as pulsed electromagnetic fields (PEMF). The aim of this study was to compare, for the first time, the functional in vitro response of human tendon cells to different dosages of PEMF, varying in field intensity and duration and number of exposures.

METHODS: Tendon cells, isolated from human semitendinosus and gracilis tendons

Medical PEMF Studies



Email Info@cell2n.com
Website www.cell2n.com

(hTCs; n = 6), were exposed to different PEMF treatments (1.5 or 3 mT for 8 or 12 h, single or repeated treatments). Scleraxis (SCX), COL1A1, COL3A1 and vascular endothelial growth factor-A (VEGF-A) expression and cytokine production were assessed.

RESULTS: None of the different dosages provoked apoptotic events. Proliferation of hTCs was enhanced by all treatments, whereas only 3 mT-PEMF treatment increased cell viability. However, the single 1.5 mT-PEMF treatment elicited the highest up-regulation of SCX, VEGF-A and COL1A1 expression, and it significantly reduced COL3A1 expression with respect to untreated cells. The treated hTCs showed a significantly higher release of IL-1 β , IL-6, IL-10 and TGF- β . Interestingly, the repeated 1.5 mT-PEMF significantly further increased IL-10 production.

CONCLUSIONS: 1.5 mT-PEMF treatment was able to give the best results in in vitro healthy human tendon cell culture. Although the clinical relevance is not direct, this investigation should be considered an attempt to clarify the effect of different PEMF protocols on tendon cells, in particular focusing on the potential applicability of this cell source for regenerative medicine purpose, both in surgical and in conservative treatment for tendon disorders.

PMID: 24957914 [PubMed - as supplied by publisher]