treatment with a specific software (Rodin 4D). This one permits to adapt the constraint according to the importance of arthritis and importance of the deformation of lower limbs. For all patients, arthritis stage and lower limbs were analyzed and they were asked to fulfill before and after 5 weeks appareled a specific and validated auto-questionnaire of life quality: KOOS (Knee Injury & Osteoarthritis Outcome Score).

Results.– Every patient had a significant improvement of symptoms, pain and function items. \((P = 0.0031)\). Improvement was with varus deformation importance and male sex. In women cases, the observance was significantly worse than for men.

Conclusions.– Results of our series show that the use of a custom discharging orthosis is pertinent in unicompartimental femoro-tibial gonarthritis treatment.

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CO30-004-e

The effects of experimental knee joint effusion on quadriceps corticomotor excitability, intracortical excitability and the cortical silent period

D. Rice\(^a\), P. McNair\(^b\), G. Lewis\(^b\), N. Dalbeth\(^c\)

\(^a\) Health and Rehabilitation Research Institute, AUT University and Waimata Pain Services, Department of Anaesthesiology and Perioperative Medicine, North Shore Hospital, Auckland

\(^b\) Health and Rehabilitation Research Institute, AUT University, Auckland

\(^c\) School of Medicine, University of Auckland, Auckland

*Corresponding author.

Keywords: Quadriceps; Knee injury; Arthritis; Corticomotor; Effusion

Introduction.– Quadriceps arthropathic muscle inhibition (AMI) is common after acute knee injury, knee surgery and chronic joint pathologies such as arthritis. Joint effusion is known to be a potent cause of AMI, enhancing spinal reflex inhibition of quadriceps motoneurons. It is currently unknown whether supraspinal pathways are also involved in AMI.

Methods.– Transcranial magnetic stimulation was used to measure quadriceps corticomotor excitability, intracortical excitability and cortical silent period duration before and after the induction of experimental joint effusion in 17 healthy volunteers. Experimental joint effusion was induced by injecting dextrose saline into the knee joint to a standardized intra-articular pressure of 50 mmHg.

Results.– Quadriceps corticomotor excitability increased significantly following experimental knee joint effusion \((P < 0.05)\), while the duration of the cortical silent period decreased \((P < 0.05)\). There was no change in short interval intracortical inhibition or intracortical facilitation \((P > 0.05)\).

Conclusions.– The results of this study provide no evidence for a supraspinal contribution to quadriceps AMI. Paradoxically, and in agreement with previous observations in patients with chronic knee joint pathology, quadriceps corticomo- motor excitability increased following joint effusion. These findings may be at least partially explained by a decrease in GABA mediated inhibition at a cortical level.

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CO30-005-e

The analysis of an original unloading brace for knee osteoarthritis

K. Langlois\(^*\), F. Lavaste, H. Pillot

Arts et métiers Paris tech, LBM Paris, Paris, France

*Corresponding author.

Keywords: Unloading brace modeling; Osteoarthritis

Aim.– Braces are one of a range of physical treatments recommended for the treatment of the painful symptoms of osteoarthritis in the medial compartment of the knee [1]. In contrast with sleep braces, unloading orthoses play a mechanical role in reducing the forces applied to the medial compartment during weight-bearing [2]. This study focuses on biomechanical analysis of an original unloading orthosis, the OdA (Orthosis Distraction and Rotation for osteoarthrosis) isolated and fitted on subjects.

Material and method.– Using computer-aided design, kinematics of the brace is reproduced. The numerical simulation of mechanical effect of the brace is getting ahead experimental data obtained on patients with knee osteoarthritis with motion analysis and radiographic imaging used by EOS.

Results/Discussion.– This model reveals a significant distraction occurring during the movement of the knee from flexion to extension, providing a significant reduction in pain for the wearer. Also, lateral rotation of the knee highlights the result of this brace. However, this model doesn’t take into account sliding and deformation between the brace and the lower limb.

References


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(77.2%), professional activity (70.8%), walking (66.5%), self-image (63.5%) and family life (59.4%).

Discussion. The results assist in better understanding patient experience, needs and profiles. This innovative survey is a first important step to better recognize osteoarthritis as experienced by patients.

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Posters

P192-e
Effect of low-level laser therapy on joint short-term and long-term pain, synovitis, anabolic and catabolic factors in cartilage of rabbits’ progressive osteoarthritis induced by ACLT

W. Pu, L. Chuan, Y. Xiaotian, H. Chengqi
Center of Rehabilitation Medicine, West China Hospital of Sichuan University, Chengdu, China

Keywords: Osteoarthritis; Catabolic factors; Anabolic factors; Synovitis; Low level laser therapy

To investigate the effect of low-level laser therapy on joint short-term and long-term pain, synovitis, anabolic and catabolic factors in cartilage of a progressive rabbit OA model induced by ACLT. 72 New Zealand White rabbits were randomly assigned into 2 groups (ACLT and LLLT group). All rabbits received ACLT surgery and were treated 2, 4, 8, 12 weeks after surgery, with 12 rabbits in randomly assigned into 2 groups (ACLT and LLLT group). All rabbits received ACLT surgery and were treated 2, 4, 8, 12 weeks after surgery, with 12 rabbits in each study period being tested. LLLT is a helium-neon (He-Ne) laser (810 nm) of 13 J/cm², 3 times a week. Pain was tested by weight-bearing asymmetry. Synovitis was assessed by histology. Cartilage was evaluated by gross morphology, histology and gene expression analysis of anabolic and catabolic factors. Results showed that at least 6 week intermittent irradiation of LLLT could reduce knee pain, control synovium inflammation, could decrease cartilage of medial femoral condyle damage and could decrease production of IL-1β, iNOS and MMP-3 and could slow down loss of TIMP-1. 8 weeks LLLT treatment could slow down lose of collagen II and TGF-β. The study suggests that LLLT plays a protective role against cartilage degradation and synovitis in rabbits with progressive OA, which could be achieved through the regulation of catabolic factors and anabolic factors in cartilage.

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P193-e
Effects of extracorporeal shock wave therapy on cartilage protection and subchondral bone remodeling in rabbits osteoarthritis induced by ACLT

W. Pu 1, Z. Yujing 1, W. Xiaofei 1, Y. Xiaotian 1, H. Chengqi 1, L. Chuan 1
1 Department of Rehabilitation Medicine, West China Hospital, Sichuan University, Chengdu, China
2 Center of Rehabilitation Medicine, West China Hospital of Sichuan University, China

Keywords: Osteoarthritis; Extracorporeal Shock Wave Therapy; Cartilage Protection; Subchondral Bone

To investigate the effects of ESWT on cartilage protection and subchondral bone remodeling in rabbits osteoarthritis. Twenty-four rabbits were divided into two groups: ACLT group and ESWT group. Rabbits in two groups received ACLT surgery to establish the knee OA model. Rabbits from ESWT + ACLT group received ESWT + ACLT group (P < 0.05). Tb.Sp of distal femur and tibia were significantly lower than that in ESWT + ACLT group. Results showed that at least 6 week intermittent irradiation of LLLT could reduce knee pain, control synovium inflammation, decrease cartilage of medial femoral condyle damage and could decrease production of IL-1β, iNOS and MMP-3 and could slow down loss of TIMP-1. 8 weeks LLLT treatment could slow down lose of collagen II and TGF-β. The study suggests that LLLT plays a protective role against cartilage degradation and synovitis in rabbits with progressive OA, which could be achieved through the regulation of catabolic factors and anabolic factors in cartilage.

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P194-e
Effects of whole body vibration on structural and functional remodeling of subchondral bone in osteoarthritis of rabbits at early stage

W. Pu 1, Z. Yujing 1, W. Xiaofei 1, L. Chuan 1, Y. Xiaotian 1, Z. Yujing 1, H. Chengqi 1
1 Department of rehabilitation medicine, West China Hospital, Sichuan University, Chengdu, People’s Republic of China
2 Center of Rehabilitation Medicine, West China Hospital of Sichuan University, China

Keywords: Osteoarthritis; Subchondral bone; Whole body vibration; Structural remodeling; Functional remodeling

Objective. To investigate the effects of whole body vibration (WBV) on structural and functional remodeling of subchondral bone in early osteoarthritis (OA) rabbits induced by anterior cruciate ligament transection (ACLT).

Methods. Twenty-four adult rabbits were randomly divided into two groups: ACLT group and WBV + ACLT group. Results showed that at least 6 week intermittent irradiation of LLLT could reduce knee pain, control synovium inflammation, could decrease cartilage of medial femoral condyle damage and could decrease production of IL-1β, iNOS and MMP-3 and could slow down loss of TIMP-1. 8 weeks LLLT treatment could slow down lose of collagen II and TGF-β. The study suggests that LLLT plays a protective role against cartilage degradation and synovitis in rabbits with progressive OA, which could be achieved through the regulation of catabolic factors and anabolic factors in cartilage.

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P195-e
Effect of extracorporeal shock wave therapy on knee osteoarthritis

S.R. Yoon 1, J.H. Kim 1
1 Department of Rehabilitation Medicine, Gwangju Veterans Hospital, Gwangju Metropolitan city, South Korea
2 Department of Rehabilitation Medicine, Gwangju Veterans Hospital, South Korea

Keywords: Knee osteoarthritis; Extracorporeal shock wave therapy; Functional outcome

Introduction. Knee osteoarthritis (OA) is the most common type of arthritis and a major cause of morbidity and disability. Extracorporeal shock wave therapy (ESWT) has been found to improve motor dysfunction and reduce pain in OA in animals.