REPETITIVE PHYSICAL ACTIVITY AND THE INCIDENCE OF ARTHRITIC CHANGES IN THE LOWER LIMBS

G. MANN1,2, N. WEEG3, I. HETSRONI1,2, O. MEI-DAN1, M. NYSKA1 and L. CANATA4,5

1Meir Medical Centre, Kfar Saba; 2The Wingate Institute, Netanya, Israel; 3Mayday Hospital, London, United Kingdom; 4Koelliker Hospital, Torino; 5SUISM, University of Torino, Italy

Received May 25, 2009- Accepted July 30, 2009

In order to evaluate the impact of physical activity, especially continuous activity such as walking, cycling or running, on the lower limb joints, we reviewed nearly one hundred articles reporting the various aspects and different research angles on this topic. The sources were divided into five categories: those claiming damage, those which are not conclusive, those claiming no damage, reviews as well as animal studies. Overall the material shows only borderline evidence that High Impact Sports Activity will damage a normal joint which has not previously suffered injury or an anatomic variation and which does not present a genetic fault. In cases presenting with osteoarthritis, single or recurrent injuries, which have gone unobserved, have often occurred previously. The evidence that continuous Non-High Impact Physical Activity like walking, cycling or running could damage a joint with no prior anatomical damage and which does not suffer a biomechanical or genetic fault, is weak and not convincing, while literature supporting no damaging effect or even improvement of the joint structure is far more persuasive and abundant. This evidence observed in human subjects and in animal models, is still stronger in animal studies than in research performed with human subjects. The safest activity, it seems, is gradual and graded activity with no exploding force, not extreme and which is not irregular for the individual trainee. The advantages of physical activity to general health as well as to the musculoskeletal system seem to strongly outdo its potential risks.

SMOKING-RELATED MUSCULOSKELETAL DISORDERS

R.S. KUMAR and V.B. SELVAN

Department of Orthopedics, Faculty of Medical Sciences, Madras University, Chennai, India

Received August 25, 2008 – Accepted January 8, 2009

Cigarette smoking is the most preventable cause of premature death in this country and is responsible for one in five deaths. Millions of other people are living with serious illnesses caused by smoking. Smoking has been linked with many health problems including an array of orthopedic conditions and complications. In the past, there have been many individual reports that deal with these relationships separately but very few published comprehensive reviews. The aim of this study is to review the available literature to find out the effects of smoking on the musculoskeletal system and the subsequent orthopedic problems. We have used predominantly online facilities such as PubMed, Orthogate, and other orthopedic web links, as well as Google, Yahoo, and AltaVista search engines for this study. Papers in English have been quoted in the present review. The time period of the review goes from 1976 to 2005. All internationally-indexed journals with articles on smoking-related musculoskeletal disorders were used. The majority of articles were chosen from journals with good impact factors. A detailed discussion about smoking-related orthopedic problems is presented. There is a real and reproducible relationship between smoking and disease of the musculoskeletal system; therefore, smoking cessation helps our bodies regain their normal health. Smokers should discuss smoking cessation strategies with their physicians.
THE USE OF DIGITISED RADIOGRAPHS IN DETERMINING THE CONSISTENCY OF THE AO AND FRYKMAN CLASSIFICATIONS OF FRACTURES OF THE DISTAL RADIUS.

A.F. MCGRATH, I.R. STEVENSON, I. MCFADYEN and A.J. JOHNSTONE

Royal National Orthopaedic Hospital, Stanmore; 1Gloucestershire Royal Hospital; 2Robert Gordons University, Aberdeen, United Kingdom

Received November 5, 2008- Accepted July 20, 2009

For any system used to classify fractures, high levels of intraobserver reproducibility and interobserver reliability are desirable. We compare the consistency of the AO and Frykman classifications of fractures of the distal radius with an assessment of the digitized radiographs of 100 fractures by 15 orthopedic surgeons and 5 radiologists using a Picture Archiving and Communications System (PACS), allowing manipulation of the image. This process was repeated 1 month later. Intraobserver reproducibility was moderate for both the AO and Frykman systems, while interobserver reliability was only fair for both the AO and Frykman systems. In each case, reproducibility using the Frykman system was slightly greater. The assessor’s level of experience and specialty was not seen to influence accuracy. The ability to electronically manipulate images does not appear to improve reliability over the use of traditional hard copies, and their sole use in describing these injuries is not recommended.

LONG-LASTING EFFECTS OF PROPRIOCEPTIVE TRAINING ON BALANCE IN ELDERLY WOMEN

O. BRUNETTI, R PANICHI, G. CERULLI, F.M. BOTTI and V.E. PETTOROSSI

Department of Internal Medicine, Section of Human Physiology; 1Department of Orthopedics and Traumatology, University of Perugia, Perugia, Italy

Received October 9, 2008 – Accepted July 20, 2009

The influence of physical exercise on the body’s balance, flexibility and leg power was studied in two groups of elderly women trained with different cycloergometers: a circular cycloergometer for resistive exercise and an elliptical one for proprioceptive and resistive exercise. The subjects were tested during training (21 weeks) and detraining (21 weeks) periods. Their balance, as shown by stabilometric indexes (ellipse area and mean velocity of center of pressure), tended to improve during training in both groups, but the effect of proprioceptive exercise was greater than that of resistive. In addition, the enhancement of balance control in the elliptical cycling group remained throughout the detraining period, while it faded away in the circular cycling group. On the contrary, leg power and flexibility showed only a transient improvement in both groups. This result indicates that elliptical cycling can be useful for an efficient balance training, implying specific learning in the central circuits controlling posture.
ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION IN FEMALES: A PROSPECTIVE RANDOMIZED COMPARISON BETWEEN HAMSTRING AND PATELLAR TENDON GRAFTS.

F. GIRON, M. LOSCO, D. LUP, R. BUZZI and P. AGLIETTI

First Orthopedic Clinic, University of Florence, Florence, Italy

Received September 24, 2008 – Accepted July 20, 2009

This study was performed to assess differences in the outcomes of ACL reconstructions performed in female patients using either a patellar tendon (BPTB) or a double-looped hamstring (DSTG) autograft fixed with modern devices at a minimum 3-year follow-up. The study design was a case series. Fifty-two female patients with chronic isolated ACL tears were randomly selected to receive a DSTG or BPTB graft for ACL reconstruction. All patients were prospectively evaluated by an independent observer using the new International Knee Documentation Committee form, the Functional Knee Score for Anterior Knee Pain Score, the KT-1000 arthrometer, and the Cybex NORM dynamometer. A radiographic study was performed to investigate tunnel widening. The average side-to-side difference in anterior tibial translation was 2.1 mm in the BPTB group and 2.4 mm in the DSTG group. The final IKDC result was A (normal knee) in 65% of the BPTB and 60% of the DSTG knees. One failure (4%) was present in the BPTB group and two failures (8%) in the DSTG group. Muscle strength deficits at Cybex Norm were within 10% for extensors and within 5% for flexors in both groups. No statistically significant differences were found in terms of subjective satisfaction, objective evaluation, stability, or muscle strength recovery. The BPTB group showed a higher incidence of postoperative kneeling discomfort (p<0.05) and a larger area of decreased skin sensitivity (p<0.001). The DSTG group showed a higher incidence of femoral tunnel widening (p=0.02). We conclude that by using strong and stiff fixation devices, ACL reconstruction in females is not influenced by graft choice.

TREATMENT OF A DEEP CARTILAGE DEFECT IN THE KNEE JOINT OF A 15-YEAR-OLD FEMALE PATIENT WITH THE TRANSPLANTATION OF CULTIVATED AUTOLOGOUS CHONDROCYTES. CLINICAL AND MAGNETIC RESONANCE IMAGING EVALUATIONS

M. HANDL, P. KOS, T. TRC, M. FRICOVA1, J. ADLER2 and E. STASTNY

Orthopaedic Clinic; 1Clinic of Imaging Methods, 2nd Faculty of Medicine, Charles University, Prague; 2Tissue Bank, University Hospital Brno, Bohunice, Czech Republic

Received August 6, 2008- Accepted July 20, 2009

This case concerns a severe cartilage defect of the femoral lateral condyle which was successfully treated by transplanting cultivated autologous chondrocytes in the form of a solid chondrograft. A 15-year-old female had a one-year history of left knee pain induced by an injury. The clinical examination showed clicking and pain on maximum flexion and extension. Magnetic resonance imaging and arthroscopy confirmed the diagnosis – cartilage detachment of the femoral lateral condyle with no chance of refixation in situ. A cartilage sample was harvested from the non–weight-bearing zone of the femur, then chondrocytes were cultivated. During surgery, the solid chondrograft was fixed by tissue glue. A knee brace and crutches (with no weight bearing for 8 weeks) were prescribed. Comparing results after surgery to the pre-operative data, clinical scores increased. Magnetic resonance imaging (MRI) was performed and evaluated at 2 weeks, 2 months, 6 months, and 12 months. An accurate fixation of the graft in the defect was observed. The originally high graft signal intensity on TSE PD sequences gradually decreased to the level of the surrounding cartilage, reflecting the chondrograft’s maturation. The regression of subchondral bone oedema was also a positive sign of the integration.
ASSESSMENT OF NERVE REGENERATION IN A NEW NEURAL SURGICAL TECHNIQUE BY COMBINED EMG AND ENG ANALYSIS

C. DE MARIA, D. S. POGGI 1, S. BURCHIELLI 2 and G. VOZZI

Interdepartmental Research Center “E. Piaggio”, Faculty of Engineering, University of Pisa, Pisa; 1Orthopaedic Clinic, Faculty of Medicine, University of Perugia; 2Institute of Clinical Physiology, CNR, Pisa, Italy

Received September 10, 2008 – Accepted July 20, 2009

The standard method used to repair large lesion gaps in the peripheral nervous system is to replace the nerve autograft in the nerve gap maintaining the same natural direction of nervous fibers. This study aims to show the extent and quality of nerve regeneration when the tissue gap is bridged using an autograft rotated 180° degrees in respect to its original position, exchanging the proximal and distal endings. We set up an experimental protocol for the rabbit model to evaluate the quality and speed of nerve regeneration in both classical and inverted grafts by means of electromyography and intra-operative electroneurography.

EVALUATION OF GROWTH ABILITY OF OSTEOGENIC PROGENITORS FROM AMNIOTIC FLUID ON TITANIUM PLATES: PERSPECTIVES FOR BONE ENGINEERING

A. PANTALONE, I. ANTONUCCI1,2, L. STUPPIA1,2, G. PALKA1,2,3 V. SALINI and C. A. ORSO

Orthopedic and Traumatologic Division, 1Department of Biomedical Sciences, “G. d’Annunzio” University Chieti-Pescara; 2Aging Research Center, C.E.S.I., “G.d’Annunzio” University Foundation Chieti-Pescara; 3Human Genetics Division, Pescara Hospital, Pescara, Italy

Received May 29, 2008– Accepted July 31, 2009

Amniotic fluid represents an important source of stem cells to be used for regenerative medicine; stem cells generated from amniotic fluid have apparent advantages of accessibility and pluripotentiality compared to embryonic stem cells and other kinds of adult stem cells respectively. The present study reports the ability of osteoblastic cells derived from rat and sheep amniotic fluid to grow on titanium plates commonly used in orthopedic implantology. Scanning electron microscopy analysis revealed an efficient cell growth on this surface, which suggests that stem cells from amniotic fluid could be an important instrument in regenerative medicine applied to orthopedic implantology.