BASEM 2002 Silver Jubilee Congress

001 THE FIST SEPARATION SIGN: AN ADJUNCT TO SELECTION OF THE ANTERIOR CRUCIATE LIGAMENT DEFICIENT KNEE REQUIRING RECONSTRUCTION

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We designed a retrospective and prospective study to analyse the presence of perceived linear separation in the anterior cruciate ligament (ACL) injured knee. This information is easily elicited by mimicking the knee joint as two fists articulating with each other. Retrospective recall is poor before reconstruction, but the sign remains obtainable in those patients with successful surgery. This sign is also absent in patients selecting conservative treatment and control normal knees. However, the sign is present in arthroscopically proven completely deficient ACL knees warranting reconstruction on the basis of pivotal instability, but is not so convincing with the partial tear or ACL on posterior cruciate ligament subgroups. In the prospectively followed patients, the perceived separation clearly resolves with surgery. The fist separation sign is easy to elicit and should be included as an adjunct in the initial consultation. It can be used as a quick screening question to aid diagnosis and facilitate fast track referral. Patients can also be confidently informed that this perceived feeling will improve with reconstruction.

003 ROLE OF EXERCISE IN MULTIPLE SCLEROSIS

E. Curry, A. J. Maile. Dept of Physical Education, Sport and Leisure Studies, University of Edinburgh, Edinburgh, Scotland, UK

Multiple sclerosis (MS) is a chronic inflammatory disease of the central nervous system where it produces widespread demyelination causing symptoms such as fatigue and muscle weakness, which can be seen to have effects on a patient’s capability to exercise. This project aimed to investigate whether exercise could have a positive effect on disease symptoms as evidence for this is emerging.

Twenty patients (six men and 14 women, mean age 44.2 years), of moderate disability were split into two groups: exercise group (seven women, three men; mean [SD] age 43.3 [2.3] years). Exercise testing consisted of subjects performing a five minute walk at a pace comfortable to each. Heart rate (HR) and rating of perceived exertion (RPE) were measured. An eight week training programme followed for the exercise group, with testing for all at the end. Profile of mood states (POMS) administration also occurred before and after the eight week period.

Significant improvements occurred in the exercise test performance of the exercise group (p<0.05). No significant differences were found for HR and RPE scores. The exercise group also improved their POMS scores for vigour, depression, and fatigue following the eight week period.

This study has shown that exercise can be beneficial to an MS population in symptom management. Further research is required using larger samples and a greater variety of disability in subjects.


004 PERFORMANCE ENHANCING DRUGS: WHAT ARE THEY DOING?

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To explore reasons for use and perceived effects of performance enhancing substances in bodybuilding, a systematic literature review was undertaken along with semi-structured interviews with three users of such drugs. A Medline search using combinations of the terms “anabolic steroids”, “health,” “sport,” and “infertility” yielded 60 relevant articles in the English language. Evidence from both the literature review and interviews suggests that use of a range of performance enhancing drugs extends beyond the world of elite sport into that of recreational bodybuilding. Estimates of prevalence from the three bodybuilders interviewed suggest that the degree of use may be more widespread than previously thought. They reported using anabolic steroids—for example, Sustanon, Deca-Durabolin, Testek, Winstrol, Pro-Viron, Delestrel—with ephedrine, growth hormone, insulin-like growth hormone, Clenbuterol, tamoxifen, Anastrozole, dinotrophin (DNP), hydroxybutyrate (GBH), thyroxine, HCG, caffeine, aspirin, Dopa, Clomiphene, and AGE (advanced glycosylation end-product) crosslink breakers. These drugs were obtained from gyms, stolen from hospitals, imported on the black market, and were often obtained more cheaply than NHS prices. The three users were extremely well informed about the substances they were taking and the effect on their bodies, yet they made informed choices to continue to use them. More research into the long term effects is needed in order for sportspersons engaging in these practices to be better advised by the medical profession.


006 CHANGES IN HAEOMOSTASIS WITH EXERCISE IN ATRIAL FIBRILLATION BEFORE AND AFTER DC CARDIOVERSION

E. Mackie, L. McKenna, T. Brummit, M. Dawson, A. McKenzie, W.S. Hill. Department of Medicine and Therapeutics, University of Glasgow, Glasgow, Scotland, UK

Aim: To assess if DC cardioversion for atrial fibrillation (AF) is beneficial in improving functional capacity and assess the haemostatic response to exercise.

Methods: Twenty patients with AF and 12 healthy controls performed a Bruce protocol exercise test. Blood sampling was performed before, after, and at 30 minutes after exercise for platelet count, prothrombin time (PT), activated partial thromboplastin time (APTT), and plasma fibrinogen. Platelet activation was assessed by flow cytometry using CD62 (p-selectin) and antibodies to fibrinogen at rest and in response to ADP and adrenaline (epinephrine). The protocol was repeated one month after cardioversion.

Results: Patients with AF had higher plasma fibrinogen levels (4.56 (1.69) v 2.06 (0.3); p = 0.0001), % CD62 (1.47 (1.5) v 0.63 (0.4);
PROMOTION OF PHYSICAL ACTIVITY THROUGH PRIMARY CARE: BELIEFS, CONCERNS, AND SELF REPORTED PRACTICE OF GENERAL PRACTITIONERS

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Physical activity promotion remains a relatively new public health initiative in the UK. The purpose of this study was to examine the beliefs, concerns, and self reported referral practice of general practitioners (GPs) towards the promotion of physical activity and the provision of exercise referral (ER) schemes. A questionnaire that examined personal exercise behaviour and exercise promotion, local ER scheme provision, and the perceived value, risks, concerns, and effectiveness of ER was posted to 89 GPs in the North East of England. Interviews were conducted with nine. Frequencies were conducted to describe the response data and χ² analyses were performed to compare responses by GP personal exercise behaviours and exercise referral behaviours. Forty eight (54%) GPs responded to the questionnaire. 90% of whom believed exercise was beneficial for general health and 71% engaged regularly in physically active. Some 85% of the GP surgeries offered exercise advice, and 81% of GPs currently refer patients to ER schemes. ER schemes were generally considered innovative, valuable interventions. Only 9% of GPs emphasised their dissatisfaction with local ER schemes and believed their place was complementary to, not replacement for, other interventions.

THE SIDE OF SPONDYLOLYSIS: A RETROSPECTIVE COHORT STUDY OF THOSE INVESTIGATED WITH SINGLE PHOTON EMISSION COMPUTERISED TOMOGRAPHY AND REVERSE GANTRY COMPUTERISED TOMOGRAPHY

P.L. Gregory, M.E. Batt, R.W. Kenslake, J.K. Webb. Queen’s Medical Centre, Nottingham, UK

Spondylolyses are stress fractures of the pars interarticularis. Participation in sport does not give rise to symmetrical stresses on the skeletal system, and hence there may be a preponderance of spondylolyses on one side of the neural arch. The aim of this study was to determine the characteristics of those investigated for spondylolysis and to establish whether this lesion is more common on either side of the neural arch.

Medical records of 213 (131 male, 82 female) patients investigated for spondylolysis at Queen’s Medical Centre, Nottingham between 1 January 1995 and 31 December 2000 were reviewed. The median age of onset of low back pain was 17.3 years (range 6.4–46.5). Most were known to have been involved in sport between 1 January 1995 and 31 December 2000 were investigated for spondylolysis at Queen’s Medical Centre, Nottingham.

A pronounced increase in scintigraphic uptake was noted on the left side of the neural arch in 31 patients and on the right in 17 (p<0.05). Spondylolysis was identified in 81 patients. Spondylolyses were bilateral on 44 occasions, but unilateral lesions occurred in the left pars 36 times and on the right 16 times (p<0.01).

We conclude that spondylolyses occur more commonly in the left pars interarticularis in young English sports people. This may be because fast bowlers tend to pars defects on the contralateral side to their bowling arm. This hypothesis will be duly tested on this dataset.

CLOPIDOGREL INHIBITS PLATELET ACTIVATION AND EXERCISE INDUCED ISCHAEMIA IN STABLE CORONARY ARTERY DISEASE

I. Thomson, J. Sandhu, P. Langley, M. Dawson, A. McKenzie, E. Mackie, W.S. Hills. Department of Medicine and Therapeutics, University of Glasgow, 38 Church Street, Glasgow G12 8QQ, Scotland, UK

Hypothesis: Clopidogrel inhibits platelet activation and provides additional benefits over aspirin in the prevention of exercise induced haemostatic changes.

Methods: Fifteen patients with ischaemic heart disease (IHD) awaiting PCI performed two Bruce protocol exercise tests while receiving aspirin 75 mg or aspirin 75 mg/clopidogrel 75 mg. Blood sampling was performed before, after, and 30 minutes after exercise. Platelet activation was assessed by flow cytometry using CD62 (p-selectin) and antibodies to fibrinogen.

Results: Exercise time improved significantly after rehabilitation (579.3 ± 499.1 seconds; p = 0.003), although it did not match healthy controls. Platelet activation was reduced at 12 weeks compared with at four weeks, although it remained higher than controls. Healthy controls showed significant platelet activation with exercise, on effect not seen in the patient group.

Conclusion: The benefits of cardiac rehabilitation have been shown with improved exercise time and reduced platelet activation. No increased risk in terms of platelet activation was found with exercise after MI, and the contrasting effect in the controls suggests that platelet activation with exercise is intensity dependent.

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EXERCISE TESTING IN ADULT CONGENITAL PATIENTS

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Aim: To compare exercise capacity in an aortic coarctation population with age, sex matched healthy controls and relate this to the echocardiographic and magnetic resonance imaging (MRI) findings as well as reported physical activity levels.

Methods: Thirteen patients and 13 controls performed a Bruce protocol exercise test with continuous expired gas analysis for measurement of peak VO$_2$. Blood pressure was recorded at rest and 1, 3, 5, and 10 minutes after exercise. Questionnaires asking for details of average weekly physical activity were completed by all patients. Variables were correlated with the MRI and echocardiographic findings.

Results: Patients had significantly elevated heart rate and systolic blood pressure (p<0.05). Exercise duration, peak VO$_2$, VO$_2$max, and maximum heart rate were significantly lower in the patient group (p<0.01). No correlation was found between exercise capacity and MRI and echocardiographic measurements. Exercise capacity did correlate with physical activity scores as assessed by questionnaire.

Conclusions: Aortic coarctation results in reduced exercise capacity relative to healthy controls. However, the elevated resting heart rate and correlation with physical activity score rather than objective imaging methods suggests that this relates to level of physical fitness rather than underlying structural abnormality.

FACtORS AFFECTING EXERCISE CAPACITY IN ADULTS WITH TETRALOGY OF FALLOT

J.P. Seely, J.H.N. Fisher, D. Jenkins, E. Mackie, W.S. Hillis. Department of Medicine and Therapeutics, University of Glasgow, 38 Church Street, Glasgow G12 8QQ, Scotland, UK

Aim: Tetalogy of Fallot is the commonest cyanotic congenital cardiac lesion consisting of pulmonary outflow tract stenosis, ventricular septal defect, overriding aorta, and right ventricular hypertrophy. Residual cardiac lesions are common, therefore we aimed to investigate the effect of these on exercise capacity as well as to correlate physical activity levels with objective measurements of exercise capacity.

Methods: Nine patients with tetralogy of Fallot and nine healthy controls performed a full Bruce protocol exercise test with continual expired gas analysis to determine peak VO$_2$. All subjects completed a physical activity questionnaire, and the scores were correlated with exercise results and echocardiographic findings.

Results: Significant correlations were found between peak VO$_2$ and physical activity scores (p = 0.02). Regression analysis showed a significant relation between heart rate response at peak exercise and peak VO$_2$ (p = 0.03). No association was found between degree of pulmonary regurgitation and peak VO$_2$. The presence of a residual ventricular septal defect had no effect on any variables measured.

Conclusion: The relation between peak heart rate and VO$_2$ suggests chronotropic incompetence as a mechanism for reduced exercise capacity in this group. The lack of association between pulmonary regurgitation may relate to the degree of pulmonary regurgitation in the group studied and cannot be extrapolated beyond this. Physical activity questionnaires reflect peak VO$_2$ achieved and could be an additional, effective tool to use in the assessment and of these patients.

RADIOLOGICAL SCREENING OF THE CERVICAL SPINE OF PROFESSIONAL RUGBY PLAYERS FOR CONGENITAL, DEVELOPMENTAL, AND ACQUIRED ABNORMALITIES

J.C. Peyrin, J.H. Tourette, B. Castanet.

Background: After a scrum accident resulting in tetraplegia, magnetic resonance imaging (MRI) showed spinal cord concussion caused by a voluminous herniated disk associated with cervical canal stenosis.

Aim: This accident and its consequences prompted us to reconsider the problem of detecting congenital, developmental, and acquired abnormalities, especially canal stenosis, by radiological screening and to define criteria for young players before they turn professional to prevent the risk of serious spinal cord injuries.

Methods: Thirty one players (19 forwards and 12 backs) of the professional rugby team of Toulon were screened during the season 2000–2001. Radiological protocol: standard plain lateral view, neutral position. Measures: [a] AP diameter of the canal; [b] AP diameter of the vertebral body; [b] Torg ratio; [c] static and morphological abnormalities; [d] additional MRI or computed tomography scans when necessary; correlation with clinical findings.

Results: We found five players with stenosis at one level, four players with stenosis at two levels or more, and three players with limit value of Torg ratio. The analysis of the spine showed associated lesions with static disorders, degenerative disks, and traumatic sequelae.

Conclusion: Professional rugby has become harder. In consequence, the risk of serious injury has increased. Methods for prevention of cervical injuries include radiological screening for abnormalities that could increase the gravity of spinal cord injuries. This protocol will be used by the French Rugby Union to screen 18 year old players hoping to join the 32 French professional teams next season.

EFFECTS OF ACUTE DYNAMIC EXERCISE ON HAEMOSTASIS IN FIRST CLASS FOOTBALL REFEREES

E.E. Mackie, M. Dawson, A. McKenzie, D. Hughes, W.S. Hillis. Department of Medicine and Therapeutics, University of Glasgow, 38 Church Street, Glasgow G12 8QQ, Scotland, UK

Background: It has been shown that acute exercise stimulates coagulation, fibrinolysis, and thrombocytosis, and physical fitness may confer protection from the potential prothrombotic effects of acute exercise.

Aim: To assess the haemostatic changes with acute exercise in a group of trained subjects in the age group at risk of acute coronary events.

Methods: Twenty referees performed a ramp protocol exercise test with continual expired gas analysis. Blood sampling was performed before, immediately after, and 30 minutes after exercise for platelet count, prothrombin time (PT), activated partial thromboplastin time (APTT), and tissue plasminogen activator (tPA). Platelet activation was assessed using flow cytometry. CD62 (p-selectin) and anti-fibrinogen were used at rest and in response to ADP and adrenaline (epinephrine).

Results: The mean (SD) age of the participants was 39.2 (5.1) years. Peak VO$_2$ achieved was 47.23 (5.02) ml/kg/min (table).

Conclusion: Acute dynamic exercise in trained middle aged subjects appears to be prothrombotic, with significant activation of coagulation, fibrinolysis, and platelets. In contrast with previous studies in young athletes, this study suggests that an older athletic population are not protected against the prothrombotic effects of exercise, and supports a role for regular cardiovascular screening in this population for signs of reversible ischaemia.

A STUDY INTO THE AVAILABILITY OF MEDICAL FACILITIES AT SCOTTISH PREMIER DIVISION RUGBY CLUBS

Y. Kathiravel, D.A.D. Macleod. Department of A&E Medicine, Royal Infirmary of Edinburgh, Lauriston Place, Edinburgh EH3 9YW, Scotland, UK; The Royal College of Surgeons of Edinburgh, Nicolson Street, Edinburgh EH8 9DW, Scotland, UK

The provision of medical facilities in adult rugby clubs has not been determined to date. The proportion of players injured has almost doubled since the advent of professionalism. Furthermore, it has been
shown that 27% of injury episodes were treated at the side of the pitch. This study aims to determine the availability of medical equipment, trained personnel, and mechanisms for recording injuries in rugby clubs in Scotland.

Questionnaires were circulated to the 10 clubs in each of the three Premier Divisions during the 2001–2002 season. A response rate of 100%, 75%, and 55% was obtained for the 1st, 2nd, and 3rd Division respectively. All clubs had access to a first aid room, with over 22% of clubs having access to more than one facility. Chartered physiotherapists reviewed the first aid rooms on a weekly basis.

The questionnaire included a list of approved medical equipment, but only 55%, 33%, and 22% of clubs in the 1st, 2nd, and 3rd Division had a complete range of equipment at the clubhouse and on the field. Overall, 55%, 75%, and 76% of clubs in the 1st, 2nd, and 3rd Division respectively maintained a record of injured players. All clubs, except one, were chartered with a physiotherapist, and 85% of clubs had the services of a dedicated team doctor. Some 87% of clubs had a first aid qualified team attendant.

This study shows that the level of equipment and personnel varied greatly among clubs, and great deficiencies have been identified.


Abstract 16

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Abstract 20

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All data are mean (SD).

*Significantly different (p<0.05), using paired t tests with Bonferroni adjustment.

The data support the use of helmets for both skiers and snowboarders, and I would also strongly advocate the use of wrist guards by snowboarders.

Abstract 18

INJURY PATTERNS AND INJURY PREVENTION STRATEGIES IN THE WINTER SPORTS POPULATION ATTENDING THE ENGLISH MEDICAL CENTRE IN VAL D’ISERE, FRANCE

S.D.J. Reid. The English Medical Centre, Val Village, Val d’Isere, France

This study takes the unique opportunity to study a predominantly British population of skiers and snowboarders abroad.

Detailed questionnaires identifying risk factors for injury were filled in by all injured parties and completed by a doctor or student doctor during a four week period in January/February 2002.

The most common injuries among skiers were of the knee (42.5% total skiing injuries) followed by the head and neck (13.1%), and the shoulder (11.9%).

Snowboarders most commonly injured their wrist (20.8%), followed by the head and neck (16.7%) and shoulder (15.3%).

Calf strains are poorly documented in the literature, but were found to be a significant injury (6.3% total skiing injuries), only observed in skiers over 55 years old. Risk factors and prevention strategies were discussed for this and other common injuries where appropriate.

Men were injured more than twice as often as women, partly because of men being more aggressive slope users. The hour between 2 and 3 o’clock was found to be when slope users were most at risk of injury.

The support data the use of helmets for both skiers and snowboarders, and I would also strongly advocate the use of wrist guards by snowboarders.

Abstract 21

EVIDENCE OF HYPERHOMOCYSTEINAEMIA FOLLOWING LONG TERM ANABOLIC ANDROGENIC STEROID (AAS) USE

F.M. Grace1, N. Sculthorpe1, M.T. Graham1, J.S. Baker1, T. Garvett1, D. Hullin1, B. Davies1. Department of Health & Exercise Science, School of Applied Sciences, University of Glamorgan, Pontypridd, Mid-Glamorgan, Wales, UK; 2Department of Pathology, Royal Glamorgan Hospital, Mid-Glamorgan, Wales, UK

Aim: To examine the effects of long term (>20 years) administration of anabolic androgenic steroids (AAS) on plasma homocysteine (Hcy), vitamin B12, and folate concentrations.

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*Significantly different (p<0.05), using paired t tests with Bonferroni adjustment.
METHODS: Subjects (n = 40) were divided into four distinct groups: AAS users (n = 10) who were still using at time of testing (SU), a group of AAS users (n = 10) who had been absent from AAS administration for more than three months before examination (SA), bodybuilding controls (n = 10) who did not use any pharmacological ergogenic aids (BC), and sedentary male controls (SC) (n = 10).

RESULTS: HCY was significantly higher in SU compared with BC, SC (p<0.01), and SA (p<0.05). Fat free mass was significantly higher in both groups of AAS users (p<0.01). Daily energy intake and daily protein intake (%) were significantly higher (p<0.05) in SU and SA compared with BC and SC groups, but was unlikely to be responsible for the observed HCY increases. Haemotology was unremarkable between the groups except for the packed cell volume which was significantly higher (p<0.01) in the SU group. A significant inverse relation was observed between sex hormone binding globulin and HCY, particularly in the SU group (r = -0.828; p<0.001), indicating a possible influence of the sex hormones in determining HCY levels.

CONCLUSION: With the mounting evidence linking the capacity for AAS to adversely affect a number of clotting factors, the significantly higher levels of HCY and packed cell volume observed in the SU group suggests that long term AAS users are at increased risk of developing future thromboembolic events.

EFFECTS OF LONG TERM ANABOLIC ANDROGENIC STEROID (AAS) ADMINISTRATION ON INDICES OF RESPIRATORY FUNCTION

F.M. Grace, A.D. Gething, M. Reilly, M. Williams, B. Davies. Department of Health & Exercise Science, University of Glamorgan, Pontypridd, Mid-Glamorgan, Wales, UK

AIM: To investigate the effects of long term anabolic androgenic steroid (AAS) administration on respiratory function.

METHODS: Subject groups consisted of AAS users (n = 9) who were still using AAS at time of testing (SU), AAS users (n = 6) who had been abstinent for more than three months (SA), bodybuilding controls (n = 8) (BC), and sedentary male controls (n = 8) (SC). FEV1, FVC, and PEF were measured and reported as percentage of predicted value.

RESULTS: Subjects were within normal range, and there were no differences between groups. Maximum inspiratory pressure (MIP), an index of inspiratory muscle strength, and grip strength were both significantly greater in SU (p<0.05) compared with group SC, with no significant difference found in MIP or grip strength between the other groups. MIP and grip strength showed significant correlation (r = 0.57; p<0.05). There were no differences in the breathing profiles of any of the groups studied.

CONCLUSION: The data from this study suggest that the combination of resistance training and AAS administration produces a significant increase in MIP in a cohort of long term AAS users. Although the use of AAS is associated with a variety of potentially hazardous consequences on cardiovascular and hepatic health, we were unable to show any adverse effect of long term androgen administration on respiratory function. The efficacy of adopting AAS into clinical practice would seem to be plausible should further studies using therapeutic doses of AAS produce similar outcomes to those shown in this investigation.

OPTIMISED AND NON-OPTIMISED HIGH INTENSITY CYCLE EROGMETRY AND RUNNING ABILITY IN INTERNATIONAL RUGBY UNION PLAYERS

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AIM: To analyse running values generated on a running track and performance indices using two 30 second friction loaded high intensity protocols.

METHODS: International rugby union players, 10 back (22.7 (1.9) years; 177.1 (4.5) cm; 75.6 (6.5) kg) and 10 forwards (24.1 (3.5) years; 182.2 (6.8) cm; 88.6 (4.8) kg), underwent two separate strength and body composition parameters using three sets on muscular strength and body composition in a group of recreational weight trainers.

RESULTS: All training groups significantly improved muscular strength (p<0.05) with no differences observed between the one and three set group (p>0.05). Positive decreases were also observed in body fat for the one set group only (p<0.05).

CONCLUSION: One set of high intensity resistance training was as effective as three sets for increasing upper body muscle strength. The one set protocol also produced greater decreases in body fat in a group of recreational weight trainers over an eight week time frame.
prevention is paramount to effective sports medicine. It also raises the question about role of the employer (the club) in preventing injury to their employees (the players).

026 THE CASE FOR ACUTE ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION


Background: Arthrofibrosis following anterior cruciate ligament reconstruction (ACLR) prevents the patient from regaining full knee movement.

Aim: To determine whether acute reconstruction (performed within three weeks of injury) is associated with an increased risk of arthrofibrosis compared with chronic reconstruction (performed more than eight weeks after injury).

Methods: Sixty two acute and 52 chronic patellar tendon ACLRs were included in the study. A standard surgical technique and accelerated rehabilitation programme were used in all cases. All patients were assessed independently at least three months after surgery.

Results: There was no significant difference in the incidence of arthrofibrosis between acute and chronic ACLR. Flexion of less than 125° or a loss of extension of more than 10° occurred in eight (12.9%) of the acute group and in nine (17.3%) of the chronic group. All knees were clinically stable, but the mean KT1000 difference was 1.21 mm in the acute group and 1.89 mm in the chronic group (p<0.05). There were also significantly more meniscal injuries (65% v 31%) and chondral lesions (31% v 18%) in the chronic group.

Conclusions: Acute ACLR is not associated with an increased risk of arthrofibrosis. However, it is associated with increased stability and less meniscal and chondral pathology.