### **27. SPORTS AND MEDICINE**

# P-041 Efficacy of rehabilitation in soccer players undergoing ACL repair using hamstring tendon grafting

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**OBJECTIVE** Anterior Cruciate Ligament (ACL) injury is a frequent knee injury problem. Recently, hamstring tendon grafting has had a very widely usage among orthopaedic surgeons due to its advantages. The main goals of rehabilitation for ACL injuries are to improve power, endurance and flexibility deficiencies, and re-establish functions by ensuring a safe return to pre-injury level. The purpose of this study was to investigate the outcomes of a rehabilitation program applied to soccer players undergoing ACL reconstruction using hamstring tendon grafting.

**METHODS** 16 soccer players undergoing ACL reconstruction using hamstring tendon grafting participated in this study. Soccer player's pain (VAS), range of motion, edema and function (Lysholm-II), were evaluated in the first and twelfth weeks. Soccer players underwent a 12-week rehabilitation program (cold application, electrotherapy agents, exercise- proprioception training, and manual therapy) for 5 days per week

**RESULTS** Physical therapy and rehabilitation resulted in a significant reduction in pain severity and knee edema, ROM and improvement in function (p<0.05). Lsyholm-II score consisting of claudication, support, deadlock, instability, pain, edema, stair climbing and squating dimensions were increased from a pre-treatment value of 16.87 (9.94) to a post-treatment value of 92.12 (8.42) (z=-3.51, p<0.05).

<b>Tablo 1.</b> Before and after treatment result (n=16). Data are means	(SD)	).
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	<b>Before Treatment</b>	After Treatment
VAS Resting	5.15 (1.17)	0.28 (0.40)
VAS Aktivity	7.21(1.01)	1.34 (0.72)
Knee Flexion Degree	68.12 (7.93)	138.43 (3.01)
Knee Flexion Degree	24.06 (3.75)	0.06 (0.17)
Knee Circumference	1.15 (0.43)	0.12 (0.22)
Measurement		
Lysholm-II score	16.87 (9.94)	92.12 (8.42)

**DISCUSSION** This study showed that rehabilitation applied after a successful surgery of ACL with hamstring tendon grafting had an important role in restoration of joint functions and improvement of function in soccer players. Further research is needed for computing the effects of other treatments for the discussion of the findings.

KEY WORDS Anterior Cruciate Ligament injury, soccer, physical therapy and rehabilitation.

### P-042 Relationship of daily changes in salivary secretory immunoglobulin a and appearance of upper respiratory symptoms during soccer training

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**OBJECTIVE** It is well known that highly trained athletes suffer from a high incidence of upper respiratory tract infections (URTI). Secretary immunoglobulin A (SIgA) is major effectors of mucosal surface protection against micro organisms causing URTI. Although several studies have investigated the relationship between falls in SIgA levels and appearance of URTI symptoms, the relationship is not yet clear. The purpose of the present study was to determine whether changes in mucosal immunity were associated with appearance of URTI symptoms in collegiate soccer players.

**METHODS** Salivary SIgA levels were measured, and the relationship between daily changes of SIgA in the non-infection period and at the time of appearance of URTI symptoms was examined.

**RESULTS** Five of 12 subjects exhibited URTI symptoms during the study period. The SIgA level did not significantly decrease before appearance of URTI symptoms. However, the saliva flow rate decreased significantly 3 days before the appearance of URTI symptoms compared to that in the non-infection period (p < 0.05). The SIgA secretion rate 3 days before appearance of URTI symptoms also tended to decrease.

**DISCUSSION** This study did not show a significant relationship between falls in salivary SIgA levels and appearance of URTI symptoms. However, the saliva flow rate was significantly decreased and the SIgA secretion rate tended to decrease at 3 days before appearance of URTI symptoms compared to the non-infection period. Therefore, monitoring mucosal immunity may be useful to assess the risk of URTI.

KEY WORDS Soccer, SIgA, upper respiratory tract infections.

## P-043 Effects of leisure exercise on blood paraoxonase and arylestarese activities and relationship with paraoxonase 1-192 polimorphism

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**OBJECTIVE** Aerobic exercise is well known to have beneficial effects on classical risk factors of atherosclerosis as blood lipid and lipoproteins. However, the relationships of leisure-time aerobic jogging and basically anaerobic soccer exercises with blood paraoxonase (PON1), arylesterase activities (AE) and PON1-192 polymorphism (PON1P) which are regarded as new risk factors have not been fully investigated. This study was designed to determine the interactions or the effects of jogging and soccer training on new risk factors as PON1, AE and PON1P.

**METHODS** The males aged 40-55 participated in the study. The two leisure-time exercise groups were selected from joggers (JG, n=20) and soccer players (SG, n=20) who had trained since many years regularly and the control group (CG, n=20) consisted of sedentary persons. Serum basal PON1, salt-stimulated PON1 (SSPON1) and AE were analysed by kinetic methods, determined some blood lipids and lipoproteins.

**RESULTS** Phenotype subgroups of PON1P were determined using SSPON1 / AE ratio. The best lipid profile was that of JG in three groups. No significant differences were obtained for PON1 and AE between JG, SG with CG (p>0.05). The improving effect of exercise on HDL-C was significantly better in R carriers (QR+RR) as compared to the QQ phenotype (p<0.05).

**DISCUSSION** There was no effect of exercise on blood AE. But the exercise led to increase in PON1 activity in QQ phenotype, in contrast to a decrease in R carriers (p<0,05). These findings were probably due to an interaction between exercise and PON1-192 polymorphism.

**KEY WORDS** Leisure-time exercise, paraoxonase, arylesterase, Paraoxonase1-192 Polimorphism, blood lipids and lipiproteins.

## P-044 Relationship between potassium and free radicals in a soccer competition half-season

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**OBJECTIVE** The blood levels of potassium and free radicals could be connected with the intensity and volume of training process. On the other side, some studies showed that their changes could be one of the indicators of overreaching or overtraining. The aim of this study was to evaluate the possible relationship between plasma levels of potassium and free radicals during a half season soccer competition.

**METHODS** The professional soccer players (30) from a football club were recruited in this study. A half competition season of 6 months were divided in three periods when the measurements were conducted in three points: the week at the beginning of conditioning phase, the week of tapering before competition phase and the week after the competition phase.

**RESULTS** There were significant differences of plasma levels of potassium and free radicals between three periods of training process during the competition half-season. At the same time, there were some significant correlations between plasma levels of potassium and free radicals.

**DISCUSSION** These findings indicated that elevated plasma levels of potassium and free radical at the end of competition phase were maybe connected with fatigue. On the other side, these changes could mean dysadaptation. Without relevant performance tests and their relationships with these changes, possible overreaching or overtraining was uncertain and unconfirmed.

KEY WORDS Soccer, potassium, free radical, overreaching, overtraining.

### P-045 Laboratory and on the field follow up of training process of professional soccer players using blood lactates

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**OBJECTIVE** The following up of improvement of training process with determination of lactate curve and anaerobic threshold is known, but there aren't enough data about using blood lactates during the specific designed soccer training on the field, in different phases of training process. The aim of this study was to evaluate the blood lactates on the filed during specific designed high aerobic productive and intermittent soccer training in different phases of training process and correlate them with blood lactates on each stage of maximal treadmill exercise test.

**METHODS** The professional soccer players (30) from a football club were recruited in this study. One half competition season of 6 months were divided in three periods when the measurements were conducted in three points: the week at the beginning of conditioning phase, the week of tapering before competition phase and the week after the competition phase

**RESULTS** There were significant differences of plasma lactate levels between three periods in laboratory and on the field. There were significant correlations between plasma lactate levels in laboratory and on the field.

**DISCUSSION** The findings suggested that the training process for the next season would be necessary to be redesigned. The construction of high aerobic productive specific soccer training could be changed according to the findings of plasma lactate levels on the field. The findings of plasma lactate levels in laboratory showed some signs of depletition of glycogen storage.

KEY WORDS Soccer, lactate, anaerobic threshold.