

## 5. SPORTS MEDICINE (1)

### O-027 Factors associated with soccer injuries: Effects of age, load of training and surface of training

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**OBJECTIVE** The injury risk in football is high, but little is known about causes and collateral factors of injuries. This study presented the monitoring of injuries produced through two seasons in several professional teams of soccer and their lower categories. The purpose of this study was to describe epidemiological factors and injury mechanism in soccer injuries (analyzing the differences depending on the age, load of training and surface of training), and provide preventive guidelines to be applied in the training process.

**METHODS** 87 professional and 96 players of lower categories (U19, U16 and U14) participated. For the registry, with a prospective design, of the dependent variable (injury) and variables (injury factors) a computerized instrument was designed. Data was analyzed with descriptives, comparison of averages through Kruskal-Wallis analysis and logistic regression.

**RESULTS** Results showed tipology of more frequent injury (muscular= 57.5%, joint and ligament= 19.2%, tendon= 14.2%, bone=12.7%), and other associated factors of interest like the possible differences based on the age (significant factor) (OR=1.78,  $p=0.05$ ), load of training (significant factor) (OR=2.13,  $p=0.05$ ), and surface of training (non-sig). The most common injury types in soccer were muscular pathology, of low gravity (70.1%), and that predominantly affected the adductor group, quadriceps, hamstrings and sural triceps.

**DISCUSSION** Age and previous injury were identified as the main risk factors for soccer injury. This study implied that in order to prevent injuries especially muscular ones, it is necessary to consider the training load, and integrate preventive programs that should include proprioception skills, eccentric exercises, active flexibility training (PNF), postural corrections and muscular reinforcement. Protections (shinguards) in all trainings and matches must be used.

**KEY WORDS** Soccer injuries, risk factors, data collection, prevention programs.

### O-028 Effects of whole-body vibration and pnf stretching on the flexibility and range of movement in elite Australian Rules football players

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**OBJECTIVE** The ability to collect the ball from beneath the knees is a major skill in Australian Rules Football (ARF), and flexibility in the lower limbs is a contributing factor in its success. Whole-body vibration (WBV) has been found to aid in the acute increase of flexibility, however; few studies have investigated its potential long-term effects. Proprioceptive neuromuscular facilitation (PNF) stretching has been found to result in increased joint range of motion (ROM) and has been suggested to be more effective than other forms of stretching. The purpose of this study was to determine whether WBV training confers a positive effect on hamstring flexibility when incorporated with PNF stretching in ARF players. It is hypothesised that the flexibility of the hamstring muscles will be greater with WBV training and PNF stretching than PNF stretching alone.

**METHODS** Eighteen elite male ARF players (age  $20\pm3$  yrs) were randomly assigned to either a WBV or control group. Both groups stretched the hamstring musculature 3 times per week for 6 weeks. Prior to stretching, WBV group performed squats whilst being exposed to 45 secs of WBV at 40Hz & 4mm amplitude on the VibroGym vibration platform. Flexibility measurements were taken with a goniometer at pre, 4, and 6 weeks.

**RESULTS** The WBV group had a significant increase ( $p < 0.05$ ) in hamstring flexibility (19.8%) when compared to that of the control group (9.2%).

**DISCUSSION** The results showed that WBV and PNF used together produced a greater increase in flexibility than PNF alone. Further research should be directed at clarifying the mechanisms behind this finding.

**KEY WORDS** Whole-body vibration (WBV), PNF, flexibility, stretching.

## O-029 A comparison of injuries in professional and non-professional youth football players

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**OBJECTIVE** Football players' potential to succeed may be determined by their susceptibility to injury. However, there is limited data on the epidemiology of adolescent soccer injuries in elite youth players, and no study has investigated the role of injury in players' ability to become a professional player. The aim of this study was to investigate, whether the incidence and severity of injuries differed in graduate players who did not progress to professional level compared to those who succeeded on graduation. The nature and location of these injuries sustained over the course of the season were also compared.

**METHODS** Depending on whether or not they had signed a professional contract with a club on graduation, 192 players in elite male French youth football players were divided into two cohorts for comparison (professional and non-professional). Over 10 seasons, injuries were prospectively diagnosed and documented by a sports physician for each player over the three-years he resided at the centre.

**RESULTS** No significant difference was found in the overall incidence of injury between groups. Incidence of individual injury type and location were similar between groups. The percentage of injuries lasting more than one week was significantly higher in non-professionals ( $p < 0.05$ ) and these players lost 4.8% more development time compared to professionals during the first year at the Centre.

**DISCUSSION** In elite French youth players, there was no certitude whether injury played a part in players' progress into professional level. Overall injury incidence and patterns did not appear to be decisive factors in the players' potential to succeed. A higher percentage of serious injuries and development time lost may have affected the youth football players' progress into the professional ranks.

**KEY WORDS** Football, injury, incidence, youth, development time.

## O-030 Effects of long term playing soccer on lumbar spine degeneration

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**OBJECTIVE** Acute injuries to the lumbar spine in soccer have been closely investigated since they immediately intensely draw attention. Although chronic injuries of the lumbar spine and their relation to spinal flexibility and trunk muscle strength were investigated, sparsely their long term affects were investigated. The purpose of this study was to determine whether playing soccer at high intensity training for a long period causes degeneration of the lumbar spine or not.

**METHODS** There have been totally fifty-seven participants in this study (15 active soccer players & 15 controls, 14 veteran soccer players & 13 controls). Isokinetic trunk strength data were recorded with the isokinetic dynamometer at the 60°/sec and 120°/sec. Plain lateral radiographs were taken. Degenerative change of each lumbar vertebra was determined by using the Kellgren and Lawrence Score.

**RESULTS** Significant difference was found among veteran soccer players, active soccer players and age matched control groups in terms of lumbar disc degeneration ( $p < 0.05$ ). Among these groups, veteran soccer players displayed greater lumbar disc degeneration (Table 1). Active soccer group players' showed greater trunk extension strength (at 60°/s. than the other groups in the study ( $p < 0.05$ ).

**DISCUSSION** Findings of the study supported that playing soccer at high intensity training at a long period of time may cause lumbar spine degeneration. Having abnormal trunk extension strength and less spinal flexibility may cause lumbar disc degeneration on the spine in later years. Therefore, well-balanced trunk muscle strength and spinal flexibility exercises should be emphasized in training program.

**Table 1.** Multivariate Analyses of Variance for soccer and control groups for trunk strength, spinal flexibility and Lumbar disc degeneration.

	Trunk Fle@60°s		TrunkExt @60°s		Trunk Fle@120°s		Trunk Ext@120°s		Trunk Rat@60°s		Trunk Rat@120°s		Spinal Flexi- bility		Lumbar Disc Degeneration	
GROUPS	Md.	Sig.	Md.	Sig.	Md.	Sig.	Md.	Sig.	Md.	Sig.	Md.	Sig.	Md.	Sig.	Md.	Sig.
Active P	27.6	.39	81.8*	.005	34.4	.95	50.71	.32	-4.9	1.0	2.09	1.0	.40	1.0	1.33	1.0
Cont. G																
Veteran P	11.8	1.0	36.6	.85	-8.6	1.0	28.70	1.0	-1.8	1.0	-4.4	1.0	-.22	1.0	7.36	1.0
Cont. G																
Active P	45.4*	.02	69.4*	.03	49.3*	.006	43.92	.59	.64	1.0	5.10	1.0	.21	1.0	-.16*	.04
Veteran P																

**KEY WORDS** Soccer, lumbar degeneration, trunk strength, spinal flexibility.

## O-031 Incidence of injury between guest and host football teams

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**OBJECTIVE** Home advantage is a well-documented phenomenon in many sports and has been demonstrated in all team sports although to a defend degree (Koning, 2005). There is also some evidence for home advantage and injuries, but there is a much more limited literature. This paper addresses the issue of home advantage in football injuries. The aim of this study was to determine the rate of injury in professional football players when playing at home and away.

**METHODS** In order to assess injury in professional 2005-2006 football league, 38 matches of Zobe-Ahan and Sepahan clubs were selected and analyzed using video analysis system. The rate of injury, injury time, side and cause of injury in both at home and away games were compared and analyzed.

**RESULTS** Although the rate of injury at away games (n=69) was 14% more than home games (n=52) the difference was not significant ( $P>0.05$ ). Injuries in the second half (n=68) were more than the first half (n=53) and occurred in mid field zone (n=87) of the pitch. The highest number of injury was moderate (n=64) and happened at the left side of body (n=47) due to tackle (n=48).

**DISCUSSION** This study showed that home advantage had no effect on the rate of injury, location of injury, time of injury, side of injury and causes of injury. Therefore it can be concluded, that existence of more injuries in away games must be considered by health professionals and team doctors.

### REFERENCES

Koning (2005) *Journal of Sports Sciences* **23**, 417-427.

**KEY WORDS** Football, injury risk, home advantage.

## O-032 Incidence, epidemiology and risk factors in professional soccer injuries

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**OBJECTIVE** Soccer injuries are a habitual problem in training and competition. Monitoring soccer injuries offers useful information for training and preventive programs. The purpose of this study was to determine injury incidence, describe epidemiological factors and injury mechanism in soccer injuries, and provide prevention programs in soccer.

**METHODS** 87 professional players participated. Dependent variable (injury) and indepents variables(injury factors and mechanisms) were registered, following the indications established by UEFA. All injuries were registered during 04/05 and 05/06 seasons, with a prospective design. Data was analysed with descriptives, comparison of averages and logistic regression.

**RESULTS** A great majority of the players were injured at least once throughout the season (78%). In this study a predominance of muscular injuries were shown (52,4%). Direct traumatism was a frequent mechanism ( 32,1%), along

with the abrupt appearance (26,8%), and the processes of overuse (18,1%). Most injuries were recovered in 8 days and took place during the competition (70,1%). Age (OR= 1.162, p= 0.05), past injuries (OR= 3.21, p= 0.01) and load of training (OR= 2.32, p= 0.05) predicted muscular injuries.

**DISCUSSION** Predominantly soccer injury as muscular injury, low gravity, in adductor group, quadriceps, hamstrings and triceps, although it also appeared to be a typical of the ligamental affectation of the ankle (LL) and the syndromes of overuse of pubis. With regard to the findings specific preventive guidelines to implement in training process can be established.

**CONCLUSION** In conclusion, with regard to the findings specific preventive guidelines to implement in training process can be established.

**KEY WORDS** Soccer injuries, risk factors, prevention programs.

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