Epidemiology of injuries in elite football

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Akademisk avhandling

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The purpose of this thesis was to study the injury characteristics in elite football, and risk factors for injury with special emphasis on anterior cruciate ligament injury. All five papers followed a prospective design using a standardised methodology. Individual training and match exposure was recorded for all players participating as well as all injuries resulting in time loss. Severe injury was defined as absence from play longer than 4 weeks.

In Paper I, all 14 teams in the Swedish men’s elite league were studied during the 2001 season. In this paper, all tissue damage regardless of subsequent time loss was also recorded. There were no differences in injury incidence between the two injury definitions during match play (27.2 vs. 25.9 injuries per 1000 hours, p=0.66) or training (5.7 vs. 5.2 injuries per 1000 hours, p=0.65). Significantly higher injury incidences for training injury, overuse injury and re-injury were found during the pre-season compared to the competitive season. Thigh strain was the single most common injury (14%).

In Paper II, 8% of all players in the Swedish men’s elite league 2001 had a history of previous ACL injury at the start of the study period. These players had a higher incidence of new knee injury during the season than players without previous ACL injury (4.2 vs. 1.0 injuries per 1000 hours, p=0.02). The higher incidence of new knee injury was seen both when using the player (relative risk 3.4, 95% CI 1.8-6.3) and the knee (relative risk 4.5, 95% CI 2.3-8.8) as the unit of analysis.

In Paper III, eleven clubs in the men’s elite leagues of five European countries were studied during the 2001-2002 season. The incidence of match injury was higher for the English and Dutch teams compared to the Mediterranean teams (41.8 vs. 24.0 injuries per 1000 hours, p=0.008) as well as the incidence of severe injury (2.0 vs. 1.1 injuries per 1000 hours, p=0.04). Players having international duty had a higher match exposure (42 vs. 28 matches, p<0.001), but a tendency to a lower training injury incidence (4.1 vs. 6.2 injuries per 1000 hours, p=0.051). Thigh strain was the most common injury (16%) with posterior strains being more frequent than anterior ones (67 vs. 36, p<0.0001).

In Paper IV, the national teams of all 32 countries that qualified for the men’s European Championship 2004, the women’s European Championship 2005 and the men’s Under-19 European Championship 2005 were studied during the tournaments. There were no differences in match and training injury incidences between the championships. Teams eliminated after the group stage in the women’s championship had a significantly higher match injury incidence compared to teams going to the semi-finals (65.4 vs. 5.0 injuries per 1000 hours, p=0.02). Non-contact mechanisms were ascribed for 41% of the match injuries and these injuries were more common in the second half.

In Paper V, all 12 clubs in the Swedish women’s elite league and 11 of 14 clubs in the men’s elite league were studied during the 2005 season. The prevalence of a history of previous ACL injury at the start of the study was three times higher among the female players (15% vs. 5%, p=0.0002). During the season, 16 new ACL injuries were recorded. There was a tendency to a lower mean age at injury among the women (20 vs. 24 years, p=0.069). Adjusted for age, no gender-related difference in the incidence of ACL injury was seen (relative risk 0.99, 95% CI 0.37-2.6). Age was associated with ACL injury incidence in women where the risk decreased by 24% for each year increase in age (relative risk 0.76, 95% CI 0.59-0.96).

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