

Factors Associated with Back Injuries in Youth Floorball and Basketball: A Prospective Three-Year Follow-Up Study

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Introduction

The aim of the study was to investigate the incidence of time-loss back injuries and the risk factors for low back injuries in youth basketball and floorball players.

Methods

In this prospective study 261 adolescents were observed prospectively for one, 80 for two and 55 for three study years (n=396) (Table 1). Athletes (mean age 15.8±1.9) completed a questionnaire and performed physical tests at baseline. During the follow-up, all back injuries were registered on a weekly basis and verified by a study physician. Athletic exposure (AE), including team practices and games, was recorded by the coach for every player.

Table 1. Baseline characteristics (n=396)

Variables	Basketball	Floorball	P-value
Age, yrs (mean, SD)			0.000
Female	14.6 (1.6)	16.5 (1.9)	
Male	15.2 (1.6)	16.9 (1.3)	
Height, cm (mean, SD)			0.5375
Female	168.4 (6.5)	166.6 (5.7)	
Male	179.3 (9.5)	178.6 (6.5)	
Weight, kg (mean, SD)			0.078
Female	60.9 (9.4)	61.2 (7.5)	
Male	68.9 (13.2)	70.1 (8.7)	
BMI (mean, SD)			0.000
Female	21.4 (2.9)	22.1 (2.6)	
Male	21.3 (3.1)	22.0 (2.3)	
Playing years (mean, SD)			0.013
Female	6.5 (2.6)	6.2 (2.6)	
Male	7.3 (3.2)	8.7 (2.8)	
Training hours ^a (mean, SD)			0.093
Female	179.4 (77.7)	221.5 (88.7)	
Male	252.0 (112.7)	246.6 (128.9)	
Game hours ^b (mean, SD)			0.000
Female	7.2 (4.9)	9.1 (6.5)	
Male	6.3 (4.2)	10.1 (6.8)	

*p-values shown refer to the t-test/Mann-Whitney test between sports groups
Boys: basketball n=100, floorball n=111 | Girls: basketball n=103, floorball n=82
^aTeam practice hours/season | ^b Active playing time in games during the season.

Results

Altogether 61 time-loss back injuries were reported by 51 players. The incidence of back injuries was 87 per 1000 athlete-years and 0.4 per 1000 hours of AE. Nearly half of the overuse back injuries resulted in more than twenty-nine days missed from regular training. Hamstrings, quadriceps and iliopsoas extensibility and general joint hypermobility were not associated with low back injuries (Table 2). Furthermore, no association between low back injuries and leg extension strength (leg press 1RM) or isometric hip abduction strength asymmetry were found in these young basketball and floorball players.

Discussion

In conclusion, back injuries lead to a considerable time-loss from training and competing among adolescent basketball and floorball players and the injuries tend to reoccur. As measured in the current study, the investigated factors cannot be used to assess the risk for low back injuries in youth team ball players.



Table 2. Hazard ratios for low back overuse injuries

Variable	Risk Factor	Adjustment Factors				
		Age	Nicotine use (Yes)	Family history of LBP (yes)	Starting age	Previous 12month LBP (yes)
HR for overuse LBI (95% CI)						
Leg press 1RM	1.00 (0.99, 1.00)	n/a	3.60 (1.23, 10.54)	1.94 (0.84, 4.47)	1.06 (0.94, 1.20)	1.54 (0.77, 3.06)
Hip Abduction strength asymmetry	0.86 (0.64, 1.15)	n/a	3.18 (1.11, 9.06)	1.92 (0.87, 4.23)	1.05 (0.94, 1.19)	1.42 (0.73, 2.77)
Iliopsoas flexibility	0.99 (0.96, 1.03)	n/a	3.32 (1.15, 9.56)	2.03 (0.87, 4.73)	1.01 (0.89, 1.15)	1.53 (0.75, 3.11)
Quadriceps flexibility	1.01 (0.97, 1.04)	n/a	3.35 (1.16, 9.66)	1.99 (0.86, 4.60)	1.01 (0.89, 1.14)	1.54 (0.76, 3.13)
Hamstring flexibility asymmetry	1.02 (0.97, 1.09)	n/a	3.02 (1.05, 8.67)	1.93 (0.87, 4.26)	1.06 (0.94, 1.19)	1.43 (0.74, 2.80)
Hamstring flexibility	0.99 (0.97, 1.01)	0.87 (0.71, 1.07)	4.19 (1.38, 12.74); No 1	2.16 (0.98, 4.77); No 1	n/a	n/a
Beighton Horan Laxity index ^a (normal)	0.95 (0.41, 2.18); Hyperflex 1	0.87 (0.71, 1.07)	4.24 (1.40, 12.91); No 1	2.19 (0.98, 4.87); No 1	n/a	n/a

^a Normal range 0–3, hyperflexibility 4–9 | n/a, Not included in the final model
Statistically significant (p < 0.05) findings are indicated with bold type.