



Pons-Villanueva J, Seguí-Gómez M, Martínez-González MA. Risk of injury according to participation in specific physical activities: a 6-year follow-up of 14 356 participants of the SUN cohort. *Int J Epidemiol* 2010;39(2):580-7.

Background Physical activity is generally accepted as a healthy habit. Nevertheless, its associated risk to cause injuries has not been sufficiently evaluated. Measuring this risk more precisely would contribute to giving more accurate health advice to the general population.

Methods Data are from participants (60% women, mean age 38 years) in a cohort of university graduates in Spain (1999–2008). Among other exposures and outcomes, they self report on frequency of participation in several physical activities over 1 year, and on incidence of sports-related injuries after 2, 4 or 6 years follow-up. Participation in 17 physical activities was categorized as a dichotomous variable (yes/no) and also according to average time per week spent in each one. Proportional hazards regression was used to estimate the adjusted relative risks [hazard ratios (HRs)] of incident injury associated with each specific physical activity or with total weekly energy expenditure in leisure-time activity [metabolic equivalents (METs)-h/week]. Statistical analyses were stratified by sex.

Results We identified 1658 incident sports-related injuries among 14 356 participants after a median follow-up of 4.6 years. When we adjusted for overall energy expenditure (METs-h/week) in other activities, age and body mass index (BMI), a higher risk of injury was associated with participation in soccer, other team sports, skiing, tennis, running and athletics (HRs ranging from 1.50 to 1.86) among men. With the exception of soccer (rarely practiced by women in Spain), similar results were found for women (HRs ranging from 1.61 to 2.04). Walking, gymnastics, swimming, mountain hiking and gardening were associated with a low injury risk.

Conclusions Despite the healthy effects of physical activity, we consider that the higher risk for injuries related to soccer, team sports, skiing, tennis, running or athletics should be taken into consideration when advice for more physical activity is given to the general population. Daily routine physical activities such as walking or gardening should be encouraged.

Table 3 HRs (95% CI) for incident injury associated with participation (yes vs no) in specific activities—The SUN Project 1999–2008 N=14 356

	Men			Women			Total (men & women)	
	Age-adjusted	Multivariate adjusted ^a	Multivariate adjusted ^b	Age-adjusted	Multivariate adjusted ^a	Multivariate adjusted ^b	Adjusted HR (95% CI) ^b	P ^c
Soccer	1.89 (1.63–2.19)	1.86 (1.61–2.16)	1.51 (1.28–1.78)	1.95 (1.16–3.28)	1.34 (0.79–2.26)	0.71 (0.38–1.32)	1.46 (1.25–1.70)	<0.001
Skiing	1.58 (1.35–1.84)	1.48 (1.27–1.72)	1.27 (1.08–1.51)	2.37 (1.96–2.85)	2.02 (1.67–2.45)	1.76 (1.43–2.18)	1.44 (1.27–1.64)	<0.001
Athletics	1.91 (1.61–2.26)	1.64 (1.36–1.97)	1.44 (1.19–1.74)	2.56 (1.79–3.67)	1.75 (1.21–2.53)	1.16 (0.77–1.75)	1.37 (1.16–1.63)	<0.001
Running	1.59 (1.39–1.82)	1.53 (1.34–1.74)	1.21 (1.04–1.41)	2.38 (1.97–2.88)	1.85 (1.52–2.25)	1.62 (1.29–2.03)	1.34 (1.18–1.52)	<0.001
Sailing ^d	1.74 (1.32–2.30)	1.74 (1.32–2.29)	1.41 (1.05–1.89)	2.57 (1.54–4.30)	1.70 (0.99–2.91)	1.31 (0.74–2.33)	1.29 (1.00–1.68)	0.05
Other team sports	1.87 (1.54–2.27)	1.73 (1.42–2.11)	1.28 (1.03–1.58)	2.57 (1.83–3.61)	2.04 (1.45–2.87)	1.60 (1.09–2.37)	1.27 (1.05–1.53)	0.01
Tennis	1.53 (1.35–1.75)	1.50 (1.31–1.70)	1.19 (1.03–1.37)	1.85 (1.52–2.25)	1.61 (1.32–1.96)	1.19 (0.95–1.49)	1.21 (1.07–1.37)	0.002
Other sports	1.42 (1.17–1.72)	1.30 (1.08–1.58)	1.11 (0.91–1.37)	1.67 (1.26–2.22)	1.46 (1.10–1.95)	1.36 (1.01–1.82)	1.16 (0.98–1.37)	0.08
Stationary bicycle	1.41 (1.21–1.65)	1.31 (1.12–1.54)	1.17 (0.99–1.39)	1.54 (1.27–1.87)	1.32 (1.08–1.61)	1.15 (0.93–1.42)	1.15 (1.01–1.32)	0.03
Cycling	1.39 (1.22–1.58)	1.30 (1.14–1.48)	1.11 (0.96–1.29)	1.68 (1.39–2.03)	1.36 (1.12–1.65)	1.11 (0.90–1.38)	1.11 (0.98–1.25)	0.09
Aerobics	1.32 (1.00–1.73)	1.21 (0.92–1.59)	0.88 (0.66–1.19)	1.62 (1.36–1.93)	1.45 (1.22–1.73)	1.20 (0.99–1.46)	1.10 (0.95–1.29)	0.21
Swimming	1.32 (1.17–1.50)	1.22 (1.08–1.39)	1.10 (0.95–1.26)	1.48 (1.26–1.73)	1.30 (1.11–1.53)	1.04 (0.86–1.26)	1.10 (0.98–1.23)	0.10
Gymnastics	1.30 (1.11–1.52)	1.23 (1.05–1.44)	1.05 (0.88–1.24)	1.52 (1.27–1.81)	1.31 (1.09–1.57)	1.10 (0.90–1.34)	1.08 (0.95–1.23)	0.26
Mountain hiking	1.23 (1.09–1.40)	1.12 (0.98–1.27)	0.97 (0.84–1.12)	1.62 (1.37–1.92)	1.35 (1.14–1.60)	1.16 (0.95–1.41)	1.03 (0.91–1.15)	0.66
Walking	1.16 (1.01–1.33)	1.06 (0.92–1.21)	0.90 (0.77–1.05)	1.36 (1.14–1.72)	1.07 (0.89–1.28)	0.92 (0.75–1.13)	0.91 (0.81–1.03)	0.15
Gardening	1.09 (0.94–1.27)	0.97 (0.77–1.22)	0.90 (0.77–1.06)	1.04 (0.83–1.32)	1.00 (0.86–1.17)	0.75 (0.59–0.96)	0.85 (0.74–0.97)	0.02
Judo, martial arts	1.35 (0.92–1.99)	1.19 (0.81–1.76)	0.81 (0.53–1.23)	1.87 (1.05–3.32)	1.50 (0.84–2.67)	1.09 (0.57–2.07)	0.76 (0.53–1.08)	0.13

The reference category includes all subjects who do not participate in each specific activity.
^aAdjusted for age (quintiles), BMI and for total physical activity (METs-h/week) due to other activities.
^bAdjusted for age (quintiles), BMI and for participation in any other activity shown in the table (yes/no).
^cP-values for the adjusted analyses with men and women together.
^dBased on only 84 subjects at risk (males) and 37 subjects at risk (females).

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