

**Table 1** Frequency of injuries in judo

Study	Competition	Study design	N of athletes (males/females)	Injury risk [%]	Injuries / 1000 AE	Males Injury risk [%]	Males Injuries / 1000 AE	Females Injury risk [%]	Females Injuries / 1000 AE	Competition / Training [%]
Engebretsen et al. 2013[9]	SOG London 2012	P	383 (230/153)	12.3	-	10.9	-	12.4	-	68.4 / 31.6
Junge et al. 2009[8]	SOG Beijing 2008	P	385	11.2	-	-	-	-	-	88.4 / 11.6
Pierantozzi & Muroi 2009[13]	4 international tournaments 2006/2007	RV	83 (51/32)	28.9	-	33.3	-	21.9	-	100 / 0
Green et al. 2007[12]	3 consecutive competitions 2005	P	392 (284/108)	13.5	41.2	14.1	41.3	12.0	40.9	100 / 0
Souza et al. 2006[11]	São Paulo State Championship, Brazil 2005	RQ	93	118.3	-	-	-	-	-	49.1 / 43.6
James & Pieter 2003[14]	National judo tournament, United Kingdom	P	116 (70/46)	12.9	42.6	14.3	48.5	10.9	34.3	100 / 0

Pieter & De Crée 1997[19]	International judo tournament, United Kingdom 1996	P	208 (140/68)	32.1	81.6	20.7	72.1	27.9	106.7	100 / 0
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AE, athlete-exposures; SOG, Summer Olympic Games; P, prospective; RV, retrospective based on video-analysis, RQ, retrospective based on questionnaire.

**Table 2** Types of injuries in male judo practitioners

Study	Period or competition	Study design	N of injuries	Fracture [%]	Sprain [%]	Strain [%]	Dislocation [%]	Contusion [%]	Other / unspecified [%]	Competition / Training [%]
Rukasz et al. 2011[26]	Training camps, the whole of the time / complete medical history	RQ	65	9.2	46.2	33.8	3.1	7.7	-	46.2 / 53.8
Green et al. 2007[12]	3 consecutive competitions 2005	P	40	2.5	17.5	17.5	-	32.5	30.0	100 / 0
Yard et al. 2007[25]	United States 1990-2003	RD	410*	27.6	24.1	‡	1.5	25.4	12.1	-
Souza et al. 2006[11]	São Paulo State Championship, Brazil 2005	RQ	111	2.7	26.4	14.5	18.2	15.5	22.8	49.1 / 43.6
James & Pieter 1999[63]	1 tournament 1996	P	54	1.9	5.6	29.7	1.9	13.0	46.5	100 / 0
Pieter & De Créé 1997[19]	International judo tournament in UK 1996	P	25	-	12.0	-	4.0	56.0	27.4	100 / 0
Kujala et al. 1995[22]	Finland 1987-1991	RD	1163†	11.3	59.8	‡	3.9	23.1¶	1.9	30.0 / 70.0

Sterkowicz 1987[28]	54 tournaments 1976- 1981. 5600 judo fights	P	260	3.9	24.6	-	1.5	35.5	34.5	100 / 0
Sterkowicz 1983[21]	Poland 1977-1980	RD	563	56.5	20.6	-	15.0	7.9§	-	27.2 / 72.8
Sterkowicz 1981[27]	6th Students' World Judo Championship 1980	P	57	7.0	22.8	7.0	5.3	38.6	19.3	100 / 0

\*73.6% males, 26.4% females.

†Including males and females.

‡Counted together with sprains.

¶Contusions summed up with abrasions.

§Summed with other.

RQ, retrospective based on questionnaire; P, prospective; RD, retrospective based on institutional documentation.

**Table 3** Types of injuries in female judo practitioners

Study	Period or competition	Study design	Number of injuries	Fracture [%]	Sprain [%]	Strain [%]	Dislocation [%]	Contusion [%]	Other / unspecified [%]	Competition / Training [%]
Green et al. 2007[12]	3 tournaments 2005	P	13	-	38.5	15.4	-	38.5	-	100 / 0
James & Pieter 1999[63]	1 tournament 1996	P	45	-	11.1	20.0	2.2	35.6	31.1	100 / 0
Pieter & De Créé 1997[19]	International judo tournament in UK 1996	P	17	-	-	-	-	41.2	58.8	100 / 0
Sterkowicz 1983[21]	Poland 1977-1980	RD	18	61.1	22.2	-	11.1	5.6*	-	6.0 / 94.0

\*Summed with other.

P, prospective; RD, retrospective based on institutional documentation.

**Table 4 Injury location in judo practitioners**

Study	Study design	N athletes (males / females)	Head	Trunk / Spine		Upper body			Lower body			Other*	C / T [%]
			Head [%]	Neck [%]	Trunk / spine [%]	Shoulder / upper arm [%]	Elbow / lower arm [%]	Hand / fingers [%]	Knee / upper leg [%]	Ankle / lower leg [%]	Foot / toes [%]	Other [%]	
Pierantozzi & Muroi 2009[13]	RV	83 (51/32)	3.7	3.7	11.1	11.1	3.7	29.6	11.1	3.7	-	11.1	100 / 0
Green et al. 2007[12]†	P	392 (284/108)	M 5.2 F 12.6	M 1.0 F 0.0	M 3.1 F 3.14	M 4.1 F 9.4	M 3.1 F 6.3	M 10.3 F 3.1	M 5.2 F 6.3	M 4.1 F 0.0	M 4.2 F 0.0	-	100 / 0
Yard et al. 2007[25]‡	RD	78 (46/32)	13.7	9.7	6.9	19.1	14.9	11.3	8.4	8.0	8.0	-	-
Barsottini et al. 2006[15]	RQ	78 (46/32)	1.0	-	9.0	19.0	4.0	14.0	26.0	14.0	12.0	1	29.0 / 71.0
Souza et al. 2006[11]	RQ	93	0.9	-	5.5	21.8	1.8	4.6 / 17.3	26.4 / 5.5	10.9	3.6	1.8	49.1 / 43.6
Kujala et al. 1996[22]	RD	78 (46/32)	3.6	6.3	12.8	20.0	7.7	7.9	22.1	8.3	6.0	3.3	30.0 / 70.0

\*Injury location not identified.

†Incidence rate per 1000 athlete-exposures.

‡Only presented study on children.

C, competition; T, training; P, prospective; RV, retrospective based on video-analysis; RQ, retrospective based on questionnaire; RD, retrospective based on institutional documentation; M, males; F, females.

**Table 5** Causes of injuries in male and female judo practitioners

Study	Study design	N	Sex	Age / Age class	Standing fight				Ground fight	Impact		Other
					Grip fight	Performing throw	Being thrown	Counter-attack		Opponent	Surface	
Uchida 2011[34]*†	RD	113	M, F¶	Juvenile	-	-	53 (46.9)	1 (0.8)	6 (5.4)	7 (6.3)	11 (9.7)	35 (30.9)
Pierantozzi & Muroi 2009[13]†	RV	83	M, F§	(18-36)^	8 (29.7)	3 (11.1)	10 (37.0)	-	4 (14.8)	-	-	-
Green et al. 2007[12]‡	P	392	M, F§	20.9 (18-43)^	9.3	10.1	11.6	1.6	4.6	-	-	-
Yard et al. 2007[25]†	RD	451	M, F&	12.6±2.8	-	-	147 (32.7)	-	-	-	123 (27.3)	-
Barsottini et al. 2006[15]†	RQ	53	M	23±10	3 (9.1)	-	28 (84.8)	-	2 (6.1)	-	-	-
Souza et al. 2006[11]†	RQ	93	M, F	Senior	7 (6.4)	65 (59.7)	27 (24.5)	-	3 (2.7)	-	-	-
James & Pieter 2003[14]‡	P	70	M	Adult	-	14.5	9.7	-	9.7	4.8	14.5	-
James & Pieter 2003[14]‡	P	46	F	Adult	-	-	6.8	6.9	22.5	-	6.8	-
Pieter & De Créé 1997[19]‡	P	92	M	Juvenile	-	-	61.6	-	10.9	-	18.1	-
Pieter & De Créé 1997[19]‡	P	51	F	Juvenile	-	14.0	42.3	-	14.1	-	14.1	-
Pieter & De Créé 1997[19]‡	P	19	M	Junior	-	20.8	-	-	41.6	-	-	-



Pieter & De Créé 1997[19]‡	P	9	F	Junior	-	100.0	-	-	-	-	50.0	-
Pieter & De Créé 1997[19]‡	P	29	M	Senior	-	-	25.6	-	12.8	-	12.8	-
Pieter & De Créé 1997[19]‡	P	8	F	Senior	-	125.0	-	-	-	-	-	-

\*Death cases.

†Absolute and (relative, in %) injury frequencies.

‡Incidence rate per 1000 athlete-exposures.

¶Males (n=113), females (n=5).

§Males (n=51), females (n=32).

\$Males (n=284), females (n=108).

&Males (n=332), females (n=119).

^(range).

N, number of athletes studied; RD, retrospective based on institutional documentation; RV, retrospective based on video-analysis; P, prospective; RQ, retrospective based on questionnaire; M, male; F, female.

**Table 6** Frequency of time-loss injuries in judo

Study	Competition	Study design	Level of competition / judokas grade	N athletes (males/ females)	Age	Injury risk [%]	Injuries / 1000 AE	Competition / Training [%]
Engebretsen et al. 2013[9]	SOG London 2012	P	Highest international level	383 (230/153)	-	8.9	-	68.4 / 31.6
Junge et al. 2009[8]	SOG Beijing 2008	P	Highest international level	385	-	6.4	-	88.4 / 11.6
Pierantozzi & Muroi 2009[13]	4 international tournaments 2006/2007	RV	High level international tournaments	83 (51/32)	18-36	3.6	24.2	100 / 0
Cynarski et al. 2008[20]	Athletes career until questionnaire	RQ	Athletes of different level and experience	282 (257/25)	-	94.0	-	59.0 / 41.0
Green et al. 2007[12]	3 consecutive competitions 2005	P	National and student level	392 (284/108)	20.9 (18-43)	4.1	12.4	100 / 0
Barsottini et al. 2006[15]	Athletes career until questionnaire	RQ	Athletes of different level and experience*	78 (46/32)	M: 23±10 F: 19±7	72.0	-	29.0 / 71.0

James & Pieter 2003[14]	National judo tournament, United Kingdom	P	National level	116 (70/46)	-	2.6	8.5	100 / 0
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\*Judokas grade. Males: 20% black belt, 50% brown belt, 30% lower level; females: 9% black belt, 25% brown belt, 66% lower level.  
 AE, athlete-exposures; SOG, Summer Olympic Games; P, prospective; RV, retrospective based on video-analysis; RQ, retrospective based on questionnaire; M, males; F, females.

**Table 7** Time-loss injuries in judo by sex and days lost

Study	Competition	Study design	N athletes (males/females)	Males Injury risk [%]	Males Injuries / 1000 AE	Estimated time loss males	Females Injury risk [%]	Females Injuries / 1000 AE	Estimated time loss females
Engebretsen et al. 2013[9]	SOG London 2012	P	383 (230/153)	-	-	> 7 days: 8 (3.5%)*	-	-	> 7 days: 3 (2.0%)*
Green et al. 2007[12]	3 consecutive competitions 2005	P	392 (284/108)	3.5	10.3	Average: 21 days†	5.6	18.9	Average: 29 days†
James & Pieter 2003[14]	National judo tournament, United Kingdom	P	116 (70/46)	1.4	4.9	21 days or more†	4.4	13.7	7 days or less†

\*Rate is referred to all judokas.

†Rate is referred to all time-loss injuries.

AE, athlete-exposures; SOG, Summer Olympic Games; P, prospective study.