Table 2- Study Characteristics

Author, year of publication	Country	Sport	Study design	Setting	No. of participants (F/M)	Mean participant Age (SD)	Type of participants	Variables of interest	Data collection mode
Ansell, Rivett and Callister 2012	Australia	Ironman Triathlon	Retrospective, cross sectional study	Ironman Triathlon (year-2006)	N=296 25.7%/74.3%	N/R	Ironman triathlon competitors (no minimum standard)	1. Injury site 2. Stretching habits 3. Training load	Questionnaire (12-month retrospective)
Bahr and Reeser 2003	Norway	Beach Volleyball	Prospective Cohort study.	Elite beach volleyball competitions	N= 178 86/92	N/R	Elite volleyballers	1. Injury incidence (time-loss or medical attention) per 1000 hours of match or training exposure	Questionnaire (7.5 weeks retrospective) & prospective registration
Bahr et al. 2004	Norway	Cross Country Skiing, Rowing, Orienteering	Cross sectional survey	National championships of each sport (year-2000)	N=842, 322/520	Skiing: 23±5 (M) 21±4(F); Rowing: 21±6(M) 22±5(F); Orienteering: 24±7(M) 23±6(F); Non-athletes: 24±5(M) 22±4(F)	1.Elite rowers and XC skiers (endurance sports) 2. orienteers (elite active controls) 3.non active controls	1. LBP Questionnaire 2. Time loss (training and competition) 3. Relationship between pain and skiing mode 4. Annual training volume (hours)	Questionnaire (Lifetime and 12-month retrospective)
Blut et al. 2010	Italy	Elite Biathlon	Retrospective cross-sectional study	The First Biathlon world cup of the 2008/2009 season	N=116 56%/44%	50% aged 21-30	Elite biathletes	1. MSK injury characteristics 2. training details 3. stress 4. menstruation 'difficulties' 5. 'breathing issues'	Questionnaire (12-month retrospective)

Brophy et al 2010	USA	NFL	Descriptive epidemiological study	Retrospective review of all injuries in the NFL from 1988 - 2007 using the sport injury surveillance database	N/R	30	NFL kicking athletes	1. Injury prevalence 2. Severity 3. nature	Retrospective Analysis of Medical Database (20 years)
Brummit et al. 2016	USA	Basketball	Prospective cohort	Male Collegiate basketball, USA	N=71 All male	20.2±1.9	Collegiate level basketballers (NCAA DIII and three NAIA teams)	1. Injury site 2. Time loss 3. Daily athletic exposures	Clinical injury records over one season
Brynhildsen et al. 1997	Sweden	Soccer	Prospective case control study	Female soccer teams in Sweden	N=261 All female	Median:21 (14-36)	Female soccer players from the 1-3 Division in Sweden.	1. Incidence of LBP across a soccer season 2. Relationship to training sessions and menstruation	Questionnaire (and prospective menstrual cycle record
Burgess, Swain and Lystad 2019	Australia	Surfing	cross-sectional study	registered participants at the 2014 Australian Surfing Titles	N=227 53/174	35.0±13.2	registered participants at the 2014 Australian Surfing Titles	1. demographic and surfing information 2. health-related quality of life (SF-12) 3. surfing injury history	Questionnaire (Lifetime and 12-month retrospective)
Cauci et al. 2017	Italy	14 different sporting disciplines	Prospective Case control study	Sports Science Campus in Gerona of Udine University, Italy	N=60 25/ 35	33.9 ± 13.3	38% elite elites (International), remainder regional level.	1. genotype and/or allele of vitamin D receptor gene (VDR) Foci polymorphism (rs2228570) 2. History of LBP and risk factors	Clinical Examination and Questionnaire (lifetime prevalence)

Chard and Lachmann 1987	UK	Squash, Tennis, Badminton	8-year retrospective study	community sports medicine clinic	N=631 231/400	N/R	Recreational Racquet sport athletes	1. Duration of injury 2. past history 3. standard of game played 4. playing frequency 5. time of onset of injury 6. treatment given	Retrospective (8 years) Analysis of Medical Database
Chimenti, Scholtes and Van Dillen 2013	USA	Tennis, Racquetball, Squash, Golf, Badminton.	Case control	University Lab	N=77 Sex not reported			1. BHAQ (measure PA) 2. LBP history questionnaire 3. Kinematics (3D motion); knee flexion and hip lat. rotation in prone	Clinical Examination and Questionnaire (12-month retrospective)
Cholewicki et al. 2005	USA	Rugby, Badminton, Martial Arts, Weight Lifting	Prospective observational study (2- to 3-year follow-up)	Yale University Sports Department	N=292, 148/144	19.4	1. varsity level athletes. 2. intercollegiate level athletes.	1. Demographics 2. Athletic experience 3. History of LBP	Clinical Examination and questionnaire (lifetime retrospective and '2-3' yr. prospective)
Clarsen, Krosshaug and Bahr 2010	Norway	Road Cycling	Descriptive epidemiology, (12-month retrospective)	Training camps of 7 professional teams	N=109 All male	26±4	11 Road cycling teams eligible for Union Cycliste Internationale	1. Demographics 2. Overuse injury registration 3. LBP and anterior knee questionnaire 4. Sports related iliac artery flow limitations	Questionnaire (12-month retrospective)
Clay, Mansell and Tierney 2016	USA	Rowing	Prospective cohort - one rowing season	Division 1 College rowing, USA	N=37 All female	N/R	College Division 1 rowers. Free of back pain for at least 6 weeks	1. Demographics 2. Rowing experience 3. Injury and LBP history, 4. ODI 5. LBP prevalence	Clinical Examination and Questionnaire (lifetime and one-season retrospective)

Correia et al. 2016	Portugal	Tennis	Observational, cross-sectional	Tennis clubs, Portugal	N=35 7/28	18.5±3	National level Tennis players	1. Nordic MSK Questionnaire. 2. Isometric trunk endurance 3. Surface bilateral EMG of trunk muscles -RA, EO, IL and LT.	Clinical Examination and Questionnaire (12 month and 7-day retrospective)
Dahlquist, Leisz and Finkelstein 2015	USA	Road Cycling	Prospective observational study.	Cycling store and bicycle distribution study, USA	N=63 17/46	41±11.2	Experienced road cyclists of at least 1 year	1. Training habits 2. Injury history 3. Bike fit; flexibility, isometric, dynamic and plyometric strength measures	Questionnaire (plus 8-week prospective)
Drakos et al. 2010	USA	Basketball	Descriptive epidemiological study	Professional athlete database (NBA)	N=1094 Sex not reported	26.8	Professional basketball players	1. Demographics 2. Injury Frequency 3. Time loss 4. Game exposures	Retrospective Analysis of Medical Database (17-year retrospective)
Eriksson et al. 1996	Sweden	Cross Country Skiing	Retrospective, cross sectional study	Cross Country Ski High-school, Torsby, Sweden	N=87 34/53	21 (16-26)	Elite cross-country skiers from Ski High school, top national level in their age groups.	1. Location of 'back pain' 2. Time of onset 3. Influence on skiing. 4. Injury Management 5. Anthropometrics, 6. Demographics 7. Training variables	Questionnaire (lifetime retrospective)
Evans et al. 2005	Australia	Golf	Longitudinal prospective study	Golf courses	N=18 All male	23.7(4)	Elite, trainee pro-golfers	1. Occurrence/severity of LBP; 2. Anthropometrics; 3. Physical activity levels; 4. Strength and endurance of trunk and hip extensors 5. Trunk ROM	Clinical Examination and Questionnaire (prevalence after each match)

Fett, Trompeter and Platen 2017	USA	42 different sports	Retrospective cross-sectional questionnaire	German Olympic Sports Confederation online athlete's database	N=1280: N=1114 (athletes) 53/46.5% N=166 (controls) 24.1/74.7%	Athletes 20.9 ± 4.8; Controls 21.2 ± 2.0	1. Elite athletes (national or international level) 2. Non-elite sports students (control)	Nordic MSK Questionnaire- Intensity of pain and sport details.	Questionnaire (lifetime, 12 months, 3 months retrospective and, 7-day prevalence)
Fett, Trompeter and Platen 2019	Germany	badminton, beach volleyball, handball, tennis, volleyball	Cross-sectional survey	online questionnaire by the German Olympic Sports Confederation	N=347 N=181 (athletes) 45.9/54.1%F (controls N=166 (controls) 24.1/74.7%	Mean age athletes: 19.7 ± 4.7years, Controls: 21.2 ± 2.0.	Elite overhead athletes competing at national or international levels. Controls: physically active sports students.	1. Prevalence of back pain at different time periods (lifetime, 12-month, 3-month and point prevalence) 2. Locations of pain 3. Typical pain characteristics	Questionnaire (retrospective lifetime, 12-month, 3-month and point prevalence)
Fuller, Brooks and Kemp 2007	England	Rugby Union	Two season prospective cohort study	Twelve English Premiership rugby union clubs	N=546 All male	N/R	Squad members of English premiership rugby union clubs	1. Location, diagnosis, severity, and cause of injury. 2. Incidence of match and training injuries (injuries/1000 player-hours)	Questionnaire (two seasons prospective)
Fulton et al. 2014	USA	Summer Dance Intensive	Three-year retrospective study	North American dance intensive onsite triage and care facility	N=321 Sex not reported	N/R	Participants who presented to the clinic.	1. Number of evaluation and treatment sessions. 2. Injury location. 3. Recurrence of injuries. 4. Time of onset	Retrospective (3 years) Analysis of Medical Database

Galera et al. 2011	France	Triathlon	Retrospective questionnaire (12 months)	French Midi-Pyrenees triathlon league	N=309 17.9/82.1%	40 (long distance), 36 (short distance)	Senior and veteran triathletes of the Midi- Pyrenees league.	1. Demographics. 2. Duration and type of practice. 3. Trauma history 4. Time devoted to warm up, stretching and daily hydration.	Questionnaire (one season retrospective)
Gonzalez et al. 2018	USA	Rowing	Prospective cohort study	Athletic training room	N=31 All female	mean age 19.9±1.4 years	National Collegiate Athletic Association Division I, open-weight rowers	1. Demographic information, 2. LBP prevalence, 3. FMS and SEBT performance	Clinical Examination and prospective injury registration (12 months) and 12-month retrospective questionnaire.
Gray et al. 2013	USA	NFL	Retrospective analysis of a 12-season database	NFL teams	N/R	N/R	Professional NFL athletes	1. Injury location 2. Player position 3. Injury activity 4. Playing time lost	Analysis of Medical Database (12-year retrospective)
Greene et al. 2001	USA	30 sports disciplines	12-month prospective cohort	University Sports Department	N=679 275/422	19 (1)	Yale University athletes	1. Demographics 2. Psychosocial factors 3. 5-year retrospective history of back pain 4. 12-month incidence of LBP	Questionnaire (5 years retrospective & 12 month prospective)
Grosdent et al. 2015	Belgium	Soccer	Observational cohort	Belgian professional soccer league	N=43 All male	18.2 (1.4)	Professional soccer players	1. LBP history 2. Pain intensity 3. 5 physical tests of lumbopelvic motor control	Questionnaire (12 month and 7-day retrospective)

Hangai et al. 2009	Japan	baseball, basketball, kendo, running, soccer, swimming	Cross-sectional study (case control)	University athletics programme	N=379 89/290 N=308 (athletes) N=71 (controls)	19.5	University athletes from different sports	1. Lumbar spine MRI 2. LBP questionnaire 3. Clinical examination of lumbar ROM.	Clinical Examination and Questionnaire (lifetime and 4-week retrospective)
Haydt et al. 2012	USA	Field Hockey	Retrospective cohort study	University field hockey players	N=90 All female	19± 1 (18-22)	NCAA Division III intercollegiate	1. LBP rate	Questionnaire (lifetime retrospective)
Hickey, Fricker and McDonald 1997	Australia	Rowing	Retrospective cohort study	Australian Institute of Sport (Rowing)	N=172 84/88	20.1(F), 21.3(M) years.	Elite rowers from the Australian Institute of Sport	1. Number of injuries 2. Timing of injuries, 3. Type of injury (acute v chronic) 4. Body region injured	Retrospective Analysis of Medical Database (10-year retrospective)
Hides et al. 2008	Australia	Cricket	Cross-sectional descriptive study	Australian national cricket training camp	N=21 All male	21.2 (2)	Elite cricketers participating in a national training camp.	1. MRI measurement of muscle CSA of Quadratus lumborum, psoas and erector spinae 2. MRI measurement of ability to contract TrA. 3. LBP prevalence	Clinical Examination (lifetime prevalence of LBP)
Hides et al. 2014	Australia	AFL	Cohort study	6 Australian Football League clubs	N=259 All male	21.9 ± 3.6 years	Elite AFL players from 6 different clubs.	1. Ultrasound imaging of multifidus. 2. Measurement of CSA and muscle thickness. 3. Pre-season and in-season lower limb injuries	Clinical Examination and Questionnaire (12-month retrospective)

Hides et al. 2017	Australia	AFL	Group intervention cohort	6 Australian Football League clubs	N=275 All male	21.9 ± 3.6 years	Elite AFL players from 6 different clubs.	1. Ultrasound imaging of multifidus. 2. Measurement of CSA and muscle thickness. 3. Pre-season and in-season lower limb injuries 4.Adherence to self-managed multifidus exercise and fitness and strength training during pre-season.	Clinical Examination and Questionnaire (point prevalence)
Hassebrock et al. 2019	USA	25 different sports disciplines	Descriptive epidemiology study	NCAA varsity teams from 25 sports	N/R	N/R	NCAA varsity athletes	1. LBP prevalence, 2. Demographics, 3. Mechanism of injury, 4. Injury recurrence, 5. Time lost from sport.	Retrospective analysis of medical records (5-year retrospective)
Iwamoto et al. 2004	Japan	NFL	Retrospective analysis of prospectively collected data in two cohorts	Japanese high school and college NFL	N=913 Sex not reported	N/R	High school and college NFL players	1. Lumbar spine abnormalities (preparticipation X-ray) 2. LBP during 1 year of participation in NFL.	Clinical Examination and 12-month prospective injury registration
Iwamoto et al. 2008	Japan	basketball, volleyball, tennis, track and field, swimming, skiing	Retrospective cohort	Japanese sports injury clinic	N=2989, 1365/1624 Sex not reported	M: 21.7 (6); F: 22.3 (7.3)	Athletes engaging in various frequencies and levels of sports	1. Common sport injuries (Lumbar disc disease, spondylolysis and non-traumatic LBP with no abnormal findings on X-ray)	Medical Database (14-year retrospective)

Jonasson et al. 2011	Sweden	Diving, weightlifting, wrestling, orienteering, ice hockey	Prognostic case control study	International and national level athletes in Sweden	N=112: N=75 athletes N=12 age matched controls All male	median age athletes: 21.5 years (range 10–41); non-athletes: 28 years (range 22–38)	International and National level Divers, weightlifters, wrestlers, orienteers, ice hockey players	1. Self-assessed pain orientated questionnaires on joint and spine pain in last week and last year	Questionnaire (12 month and 7-day retrospective)
Jones, McMichael and Fleisig 2014	USA	Baseball	Descriptive epidemiological study	University and professional baseball teams	N=336 All male	N/R	College and professional baseball players	1. Descriptive data, 2. LBP history and treatment, 3. Oswestry Disability Index (ODI)	Questionnaire (point prevalence)
Kameyama et al. 1999	Japan	Canoe Racing	Retrospective survey and examination	Japan canoe association	N=417 103/306 (8 athletes sex N/R)	19.5 (3.1)	Members of the Japan Canoe Association. Not active athletes in other sports (controls)	1. Lumbar spine x-ray 2. Sports Injury Questionnaire 3. Canoeing background 3. Injury History	Clinical Examination and Questionnaire (point and lifetime prevalence)
Kaneoka et al. 2007	Japan	Swimming	Case control study	Japanese National Training program	N=94 35/59	Swimmers: 19.6; Control: 21.1	Elite Japanese swimmers. Controls: recreational swimmers.	1. MRI for disc degeneration, 2. LBP questionnaire, 3. Swimming techniques and training loads	Clinical Examination and Questionnaire (lifetime prevalence)
Knaepen et al. 2009	Belgium	Scuba Diving	Retrospective self-assessment questionnaire	Recreational scuba diving club	N=181, 43/138	39.1±12.5 years	Recreational scuba divers	1. Lifetime and 1-year prevalence of LBP	Questionnaire (12 month and lifetime) retrospective
Kountouris, Portus and Cook 2013	Australia	Cricket	Prospective cohort study	Elite Australian Cricket fast bowlers	N=23 All male	24.0 (3.6)	Elite male fast bowlers	1. Magnitude and side of QL asymmetries as a predictor for lumbar spine injury examiner by MRI	Clinical Examination and one season prospective injury

								2. Incidence of LBP	registration
Koyama et al. 2013	Japan	Gymnastics	Case control	College gymnastics program	N=104 34/70	19.7 ± 1.0	Pre-elite, elite, and national gymnasts.	1. LBP Questionnaire 2. MRI findings	Clinical Examination and Questionnaire (point prevalence)
Kraft et al. 2009	Germany	Horseback Riding: Show-jumping, Dressage, Vaulting	Cross sectional study	NR	N=88 N=58 athletes 40/18 N=30 controls, 13/17	Athletes: 32.4±9.3. Controls: 28.7 ± 5.6	German elite equestrian athletes	1. The prevalence of disc degeneration on MRI 2. Relationship between LBP and riding discipline, body mass index (BMI), trunk/leg-length coefficient, and MRI results	Clinical Examination and Questionnaire (lifetime prevalence)
Kulling et al. 2014	Switzerland	Beach Volleyball	Cross sectional study, level 3 evidence	Volleyball grand slam event in Austria	N=29 All male	28	Professional male volleyballers	1. Questionnaire on LBP 2. Clinical examination 3. MRI of lumbar spine	Clinical Examination and Questionnaire (lifetime prevalence)
Kunene et al. 2018	South Africa	Golf	cross-sectional correlation study	two golf clubs in Durban, KwaZulu-Natal	N=271 36/235	33.20% between the ages of 39 and 47	Registered amateur golfers	1. LBP prevalence (Nordic MSK questionnaire) 2. Demographics	Questionnaire (12-month retrospective)
Lynch et al. 2014	USA	NFL	Cohort study	Professional NFL club	N=414 Sex not reported	N/R	Professional NFL players with a lumbar spine diagnosis.	1. Length of play, 2. Number of games started, 3. Performance score 4. LBP diagnosis 5. MRI	Clinical Examination and retrospective analysis of medical database (8 years)
Mall et al. 2012	USA	NFL	Descriptive epidemiological study	NFL injury surveillance database	N/R	N/R	Professional NFL players	1. Incidence of spinal injuries, 2. Type of injury, 3. Position played, 4. Mechanisms of injury	Retrospective Analysis of Medical Database (11 seasons)

Malliaropoulos et al. 2017	Greece	Track and Field events	20-year observational cohort study	National track and field team, sports medicine clinic	N=130 47/83	20.22±4.135	Elite track and field athletes with mechanical LBP over 20-year period.	1. All athletes presenting with low back pain were examined 2. Lumbar MRI 3. LBP aetiology and recurrence with age, gender and sporting event	Clinical Examination and Analysis of Medical Database (20-year retrospective)
Marshall et al. 2007	USA	Softball	Retrospective analysis of injury surveillance	NCAA women's softball	N/R All female	N/R	NCAA women's softball Div. I, II, & III	1. Trunk and back injuries prevalence	Retrospective Analysis of Medical Database (16 years)
Maselli et al. 2015	Italy	Rowing	Cross sectional Cohort study	National indoor rowing championships	N=133 26/107	19	National championship - Scull 59 - Scull/Sweep 50 - Sweep - 24	1. Prevalence of LBP (in life, the last year, the last 6 months, the last month), 2. Site of LBP, 3. Symptoms observed 4. Duration of symptoms, 5. Frequency of symptoms, 6. Severity of LBP, 7. Absence from work and suspension from training.	Questionnaire (lifetime, 12, 6,1-month retrospective)
Mchardy, Pollard and Luo 2007	Australia	Golf	Mailed survey to randomly selected golf clubs	Registered golf clubs in Australia	N=1634 318/1316	55.15 (14.59)	Amateur golfers	1. Back injury in previous year 2. Demographics 3. Training frequency	Questionnaire (lifetime)
Mchardy, Pollard and Luo 2007b	Australia	Golf	Mailed survey - 12 month follow up	Registered golf clubs in Australia	N=588 115/473	59.1 (12.9)	Amateur golfers	1. Injury onset, mechanism, previous history, and whether treatment was sought	Questionnaire (12-month retrospective)

Montalvo et al. 2017	USA	CrossFit	Retrospective survey	Four Cross fit franchises in South Florida	N=191 97/94	N/R	Cross fit athletes	1. Injury location 2. Years sport participation, 3. Sessions per week, 4. Physical activity outside cross fit, 5. Motivation for participation	Questionnaire (6-month retrospective)
Nadler et al. 1998	USA	football, soccer, baseball, track, tennis, basketball, swimming, volleyball, softball	Prospective analysis of the incidence of low back pain in college athletes	N/R	N=257 87/170	N/R	College athletes	1. Leg length discrepancy, 2. Hip flexor tightness, 3, Lower extremity acquired laxity or overuse injury 4. Relationship to the development of low back pain	Clinical Examination & 12-month prospective injury registration via clinical records
Nadler et al. 2000	USA	Sports not specified	Cross sectional study	NCAA Division I college	N=210, 70/140	N/R	College athletes. (sport discipline N/R)	1. Hip extensor strength, 2. Hip abductor strength, 3. Asymmetry of hip muscle strength, 4. Previous lower extremity injury 5. Previous LBP	Clinical Examination and questionnaire (12-month retrospective)
Newlands, Reid and Parmar 2015	New Zealand	Rowing	Prospective cohort study	NZ National Rowing Team	N=76 30/46	M:23±4, F:21±4	International level rowers	1. Demographics, 2. Age at commencement of competitive rowing, 3. Level of competition, 4. Rowing discipline 5. Previous history of LBP. 6. Movement Competency Screen (MCS) score 7. Training volume 8. LBP prevalence.	Questionnaire (12 months prospective)

Ng et al. 2016	Australia	Field Hockey	Cross sectional study	Australian field hockey players	N=432 188/242 (2 unidentified)	non-drag flickers- 26.6 (9.0); drag flickers 23.7 (6.0)	Field hockey players (local to International level)	1.Modified OSTRC questionnaire. 2. Demographics.	Questionnaire (3 months retrospective)
Noormohammadpour et al. 2016	Iran	Volleyball, Basketball, Futsal, Tennis, Badminton, Swimming, Tracking, shooting, and Karate.	Cross sectional survey	University Olympiad for female medical students in Iran	N=1059 All female	23.1 (3.8)	Female university athletes	1. Demographic 2. LBP Questionnaire	Questionnaire (lifetime, 12 months and 48 hours retrospective)
Okada et al. 2007	Japan	Judo	Cross-sectional descriptive study	Collegiate Judo club	N=82 All male	20.1± 0.9	Elite collegiate male Judo athletes	1. LBP evaluated by Osaka City University (OCU) test. 2. Lumbar radiological abnormalities (x-ray)	Clinical Examination and Questionnaire (point prevalence)
Olivier et al. 2017	South Africa	Cricket	Prospective cohort	South African Premier League Cricket clubs	N=26 All male	21.8±1.8	Right handed fast bowlers	1. Injury Incidence 2. Demographics	Clinical Examination and one season prospective injury registration
Olivier and Gray 2018	South Africa	Cricket	Longitudinal cohort study.	Medical suites associated with the respective cricket franchises	N=97 All male	26.8 (SD 4.3) years	Professional, domestic cricket players	1. Non-contact, low back and lower limb (lower quarter) injuries 2. Pre-participatory musculoskeletal screening battery	Clinical Examination and 12-month prospective injury registration
Orchard et al. 2002	Australia	Cricket	Prospective cohort	Australian test and state cricket teams	N/R	N/R	State and test cricketers	1. Level of play 2. Injury incidence	Injury database (2 season prospective and 3 season retrospective)

Panagodage Perera et al. 2019	Australia	Cricket	Prospective cohort study	Cricket Australia	N=121 All female	24.2± 4.5 years.	Elite female Australian Cricketers	1. Incidence, prevalence, nature, severity, and mechanisms of injury in elite female cricketers	Clinical Examination and two season prospective injury registration
Ranson, Burnett and Kerslake 2010	United Kingdom	Cricket	Cohort study	England and Wales Cricket Board Elite Fast Bowling Group.	N=28 All male	N/R	Elite Cricket Fast bowlers	1. Bowling exposure 2. MRI scan 3. Clinical nature of injury	Clinical Examination and Questionnaire (12 month prospective)
Raske and Norlin 2002	Sweden	Weight lifting, Powerlifting	Cross sectional Cohort study	Swedish elite weight lifters and power lifters	N=115, 15/100 (Control N=50)	30+/-7	Elite weight lifters and power lifters. Non-elite weight lifters (control)	1. Self-reported injuries 2. Comparison 1995 and 2000	Questionnaire (point prevalence and 2-year retrospective)
Rebella 2015	USA	Pole-Vaulting	Descriptive epidemiology study	Big Ten and South-eastern University conferences, Wisconsin.	N=135 52/83	20±1.4	American Collegiate vaulters	1. Demographics 2. Level of experience 3. Injury history	Injury database (one season prospective registration)
Reis et al. 2015	Brazil	Jiu-jitsu	Cross-sectional, observational.	Jiu-jitsu training sites in the State of Rio de Janeiro	N=80 All male	median=25.5; IQR=8	Brazilian jiu-jitsu athletes, ranging from white to black belts.	1. Presence of Chronic LBP 2. Quebec Back Pain Disability Scale	Questionnaire (point prevalence)
Roussel et al. 2016	Belgium	Field Hockey	Cross sectional Cohort study	Belgian hockey clubs	N=88 All male	28.8 (7.6) years	Club level hockey players	1. Prevalence of LBP (Nordic MSK questionnaire) 2. Activity limitations due to neck or back pain	Questionnaire (lifetime and 12-month retrospective)

Schultz et al. 2016	Australia	Sailing	Prospective cohort	Two bi-annual sailing camps at Australian Inst. of Sport. Online Australian data collection platform	N=22 7/15	22(3.7)	Olympic class sailors	1. Injury incidence 2. Location 3. MSK screening	Clinical Examination and 12-month prospective injury registration
Schultz, Lenz and Buttner-Janz 2016b	Germany	36 different sporting disciplines	Retrospective cross-sectional online survey	German Sports Aid Federation; Berlin, Germany	N= 929, 505/424	21.4	Athletes from 36 different sports	1. 12-month prevalence of LBP. 2. Pain intensity (VAS), 3. Demographics	Questionnaire (12 months retrospective)
Smoljanovic et al. 2018	Croatia	Rowing	cross-sectional study	World Masters Rowing Regatta	N=743 268/475	50 yrs.	Masters rowers who participated at the 34th FISA World Rowing Masters Regatta	1. Injuries sustained during a 12-month period	Interview (12-month retrospective)
Soomro et al. 2018	Australia	Cricket	cohort study	N/R	N=408 All male	24.1 (SD: ±5.3)	408 male cricketers in 20 teams playing SGC competition	1. Injury incidence and severity	Clinical Examination and 12-month prospective injury registration
Sobrino et al. 2015	Spain	Dancing: Classical ballet, Neoclassical, Contemporary, Spanish.	Cross-sectional study	Spanish dance companies	N=135 75/60	25.79(5.69)	Spanish Dancers	1. Demographics, 2. Injury site 3. Incidence (collected over 5 years)	Medical insurance database (5-year retrospective)

Strömbäck et al. 2018	Sweden	Powerlifting	Cross-sectional study	N/R	N=104 53/51	28.3 ± 7.6 years	Powerlifters from the Swedish Powerlifting Federation	1. Prevalence, localization, and characterization of injuries	Questionnaire (point prevalence and 12-month retrospective)
Stuelcken, Ginn and Sinclair 2008	Australia	Cricket	Retrospective survey and clinical measures	Elite cricket, University of Sydney, Australia	N=32 26/8	Female: 22.5(4.5); Male: 21.5(3)	Elite (national standard) cricketers	1. Career Hx of LBP 2. ROM of the lumbar spine and hips 3. Trunk extensor endurance	Clinical Examination and Questionnaire (12 month and career history; retrospective)
Swain et al. 2018	Australia	Dancing	Prospective cohort	pre-professional Ballet school, university dance programmes, professional ballet company.	N=119 100/19	Male: 17.1 (3.7), Female: 17.9 (2.6)	Male and female classical ballet and contemporary dancers	1. Demographic 2. LBP history. 3. Monthly prevalence and impact of LBP.	Questionnaire (one month and lifetime retrospective)
Triki et al. 2015	Tunisia	Gymnastics Judo, Handball, Volleyball, Basketball, Athletics, Soccer, Weightlifting, Swimming	cross-sectional	Sports institute, Tunisia	N=5958 2579/3379	21.1(1.7)	First and second year students in the sports institute	1. Demographics; 2. Prevalence of LBP; 3. Training hours 4. Type of sport	Questionnaire (point prevalence)
Trompeter, Fett and Platen 2019	Germany	Rowing	Cross-sectional survey	online questionnaire by the German Olympic Sports Confederation	N=311 N= 156 rowers, 41.7/57.1% N=166 controls 24.1/74.7%	Mean age rowers: 22.2 ± 5.1; controls 21.2 ± 2.0.	Elite and non-elite German rowers. Control: Physically active sports students.	1. Prevalence of BP. 2. Pain, 3. Location, 4. Severity (CPG) 5. Demographics	Questionnaire (lifetime, 12 month and 7-day retrospective)

Tunas et al. 2015	Norway	Football and Handball	Cross-sectional survey	Sports trauma research centre, Oslo, Norway	N=634 All female	Footballers 22.4±4; handballers 22.3±3; control group 25.6±4	Elite female football and handball players. Gender matched control group.	1. LBP history Nordic MSK questionnaire (past 7 days, 12 months); 2. Treatment for LBP; 3. Effect of LBP on work; 4. Surgery Hx; 5. Radiculopathy Hx; 6. Time loss; 7. Training/playing experience and Hx;	Questionnaire (7 day and 12-month retrospective)
Van der Worp et al. 2016	Netherlands	Running	Prospective cohort	Female only running event (Marken-loop) over 5 or 10km. Netherlands	N=417 All female	38.7 (11.5)	Adult female recreational runners	1. Demographics; 2. Training routines; 3. Running experience; 4. Injury history; 5. Other sport participation; 6. Current injury details; 7. Orthopaedic tests	Questionnaire (12 week prospective)
Verni et al. 1999	Italy	Swimming	Retrospective	Sports medicine institute, Bologna, Italy	N=31 14/17	Male:19.5(4), Female: 17.5(2)	Elite swimmers	1. Demographics; 2. Clinical details; 3. Radiological (x-ray) and isokinetic evaluation	Clinical Examination and question on LBP hx (point prevalence)
Villavicencio et al. 2006	USA	Triathlon	cross-sectional	Triathlon race database (email list from director). University of Colorado, USA	N=87 31/56	36.1	Competitive triathletes	1. Demographics 2. LBP questions: frequency, duration, intensity of pain from most recent episode; 3. Relationship of pain to sport; 4. Age at first episode; 5. Injury incidence; 6. Medical care received 7. Neck pain questions	Questionnaire (lifetime retrospective)

Wilkerson et al. 2012	USA	Football	Prospective cohort study	National Collegiate Athletic Association Division I Football Championship	N=83 Sex not reported	20 ± 1.5	College footballers	1. MSK questionnaire 2. BMI; 3. Injury History 4. 4 different assessments of core muscle endurance; and measurement of step-test recovery heart rate. 5. ODI, IKDC, FAAM	Clinical Examination and injury registration by clinician (one season prospective)
Wilson et al. 2010	Ireland	Rowing	Prospective cohort	International rowing squad, Ireland	N=20 8/12	26.25 (4.18)	Irish International rowers	1. Incidence of injury; 2. Training and competition exposure; 3. Type of injury	Questionnaire (12 month prospective)