Table 1 Characteristics of included studies, assigned to technique training, dynamic strengthening, static strengthening, or balance training

Author (Study Design)	Participants	Intervention	Main Results
a. Technique Training			
Jump Landing Performance – Instruction			
Almonroeder, 2020 (*Pre-Post)*	♀ Regular active athletes (basketball, soccer, volleyball) (*n*= 16; 21.81±2.59) experienced in jump and landing tasks (4/10 Tegner Activity Scale)	**Training:** 2 different sets of instruction ○ Internal focus (e.g., 'focus on bending your knees when you land') ○ External focus (e.g., 'focus on landing softly') **Duration:** 7 drop landings for baseline, internal and external focus condition (21 jumps in total)	• Both: < landing force, > hip and knee flexion angle versus baseline (p<0.05*) • External focus: > knee flexion at time of the peak force & < leg stiffness compared to internal focus (p<0.05*)
Benjaminse, 2018 (*RCT*)	♀, ♂ Ball sport athletes (*n*=40, 20 ♂ & ♀; 22.5±1.6 years), active ≥4 h p.week, assigned to: - *Verbal Internal Focus (VIF)* (*n*=10) - *Verbal External Focus (VEF)(n*=10) - *Video (V) (n*=10) - *Control (C)(n*=10)	**Training:** group specific instruction & Feedback (LESS Score (VEF & IF) ○ *VIF*: 'extend your knees as rapidly as possible after the landing.' ○ *VEF:* 'push yourself as hard as possible off the ground after landing.' ○ *V*: expert performing task, must imitate him. Feedback (VEF & VIF possible → LESS score) **Duration:** pretest (5 baseline trials), 2 training blocks (each 10 trials), post-test (after training, each 10 trials)	• VEF: improved LESS score ♀ (p<0.05*) • V: improved LESS score ♂ & ♀(p<0.05*)
Chijimatsu, 2020 (*Pre-Post*)	♀ Athletes (*n*=15; 20.7±0.7 years) regular sport activities (4 basketball, 2 volleyball, 2 badminton, 4 tennis, 2 track & field, 1 dancing), active 30 min. a day ≥3 p.week	**Training:** 15 single leg drop vertical jumps including video landing instruction of their own jumps: ○ Pelvic and trunk remain horizontal in the frontal plane. **Duration:** 5 min. warm-up (stationary bike)	• Post-instruction: < peak knee abduction moment (p=0.004*) and internal rotation angles at initial contact (p=0.037*)
McNair, 2000 (*RCT)*	♀,♂ recreational athletes (*n*=80; 24±7). ♀(*n*=53), ♂ (*n*=27), 1-2h active for 3-5 p.week, randomly assigned to -*Technical instruction* -*Auditory* -*Imagery* -*Control*	**Training:** ○ *Technical instruction:* limb position instructions ○ *Auditory cue*: listen to impact sounds ○ *Imagery*: metaphorical ○ *Control:* own feedback system for soft landing **Duration:** 8 double leg jump landings from a 30cm box, 1 session	• Technical instruction: <peak GRF compared to control (p<0.05*) • Auditory cue: <peak GRF compared to control (p<0.05*) • No sig. differences between technical and auditory cue No sig. differences between imagery & control group

Milner, 2012 (Crossover)	♀ Athletes (*n*=12; 25±2 years) active ≥3h p.week, random order of instructions	**Training**: 3 instructions (CMJ landing) after control instruction ○ control: 'step on the force plate with one leg on each plate, squat as low as you require, jump as high as possible, and land on the force plate *with one leg on each plate*" ○ knees: '(…) *with knees over toes* ○ equal: *'(...) with equal weight distribution on both your feet* ○ softly: *'(...) as softly as possible.*' **Duration:** 5 trials, 1 session	• Knees: > peak knee flexion compared to others (soft: *p*=0.024*; equal weight: *p*=0.021*) • Equal: < asymmetry peak vGRF compared to others (control: *p*=0.024*; knees: *p*=0.010*; soft: *p*=0.042*) • Softly: < peak vGRF compared to others (control: *p*=0.018*; knees: *p*=0.027*; equal weight: *p*=0.036*)
Mizner, 2008 (*Pre-Post*)	♀ Collegiate athletes (*n*=37; 19.5±1.2 years) in high-demand sports (soccer: 10, basketball: 11, tennis: 9, volleyball: 7)	**Training:** verbal instruction DVJ landing technique (31cm box) after uninstructed DVJ ○ Instruction: 'land as softly & quiets as possible, increase the amount of knee bending when landing, land on your toes, keep the chest over your knees and knees over the toes, avoid knee valgus during landing. Including Cues for athletes to focus on shock absorption.' **Duration:** 5 minute instruction, ≥ 4 practice trials with feedback & 3 successful test trials; 1 testing session ≤2h	• Short-term improvement in peak knee flexion angle, < peak vGRF and peak knee abduction angle (*p*<0.001*) • Muscle strength: poor predictor of improvements
Tate, 2013 (*RCT*)	♀ Athletes (*n*= 26; 18-30 years), sport involving jumping, with medial knee displacement (jump-landing task), active > 2 p.week for 30 min., randomly assigned to: - *Instruction & Home-Based Training* (*n*=13; 21.7±1.9 years) - *Control* (*n*=13; 20.6±2.4 years; sham instruction)	**Training:** supervised CMJ training (both groups) ○ Experimental: training in front of a mirror, info & photos of correct knee position ○ Control: provided incorrect (knee valgus) and correct model (no knee valgus) & 2 home-based trainings. Instruction: 'jump as high as you can.' **Duration:** 2 supervised, 2 home based intervention	• Experimental group: > knee flexion angle after home-based training 1 & 2 compared to control (*p*<0.05*) & < peak vGRF after home-based training 1 & 2 compared to baseline and control (*p*<0.05*). No significant change in knee abduction angle or moment.
Turner, 2018 (*Pre-Post*)	- ♀ *Dancers* (*n*=12; minimum of 7 years dance experience, >12h training p.week) - ♀ *Non-dancers* (*n*=15; active > 2-3 x p.week > 30 min., intensity: 3-6 MET up to >6METs) (*n*= 27; 18-25 years).	**Training:** bilateral barefoot DL (30.5 cm box). 2 videos with no verbal instruction following video with verbal instructions. Feedback as needed after first 2 videos ○ Verbal instruction: 'hip feed wide as possible, toes pointing forward, balls of feet at the front of the edge of the box, landing with toes touch down first with upright trunk, no knees fall in towards each other' **Duration:** 3 practice trials, 3 successful trials, 1 session	• Instruction: > knee abduction angle (i.e., valgus) in non-dancers & not in dancers (*p*=0.014*)

Welling, 2017 (*RCT*)	♀, ♂ Ball team sports clubs (Groningen) (*n*=40, ball sports minimal 4h p.week.), assigned half ♂ & ♀: - *Verbal Internal Focus (VIF)* (*n*=10; 22.10±2.64 years; Football (5), Volleyball (3), Handball (2)) - *Verbal External Focus* (VEF) (*n*=10; 22.60±1.35; Football (3), Handball (3), Basketball, Hockey, Korfball, Volleyball (á 1)) - *Video (V)* (*n*=10; 22.90±0.57 years; Football (3), Handball (3), Basketball (2), Korfball & Volleyball (á 1)) - *Control* (*n*=10; 22.40±1.35 years; Volleyball (4), Football (3), Basketball, Handball, Hockey (á 1))	**Training:** instruction on DVJ performance ('Jump as high as possible after you have landed off the box') followed by group specific instructions & feedback (LESS score) for all except of control: ○ VIF: 'Extend your knees as rapidly as possible after the landing on the force plate' ○ VEF: 'Push yourself as hard as possible off the ground after landing on the force plate' ○ V: 'try to imitate the jump best you can' **Duration:** 5 DVJ each group (pre- & posttest) after general & group instruction following training block 1 and 2 (each 10 jumps)	• **VIF**: ♂: > knee flexion (non-dominant leg) pretest compared to 2 training block (p=0.043*, d=0.57); ♀: > knee valgus moment (non-dominant leg, post-test) compared to retention (p=0.039*, d=0.60) • **VEF**: ♂ < knee valgus moment (post-test, non-dominant leg; p=0.003*, d=2.63) & ♀ (retention; p=0.034*, d=1.00) • **V**: ♂: > knee flexion angels (non-dominant, post-test; p=0.021*, d=2.60) & retention (p=0.019*, d=2.15) compared to VIF & training block 1 & 2 (p=0.008*, d= 1.22; p=0.030*, d=0.030). ♀: > knee flexion angle (non-dominant leg, retention) compared to post-test (p=0.008*, d=1.27) & < vGRF (p=0.031*, d=0.36)
Jump Landing Performance – Feedback			
Cronin, 2008 (*Pre-Post*)	♀ NCAA Division 1 intercollegiate volleyball players (n = 15; 21.3±2.4 years) trained volleyball ≥ 3x p. week with additional strength training ≥ 2x p. week.	**Training:** bilateral JL while spiking a volleyball off a toss by coach (practice-jump) following reading & listening to same instruction (first jumps). Following, 2 min. instruction with demonstration, practice, same verbal & visual feedback for all participants followed by 5 jumps with no feedback (second jumps). ○ Instructions: 'landing on forefoot to rearfoot, symmetrical across both legs, knee flexion approaching 90°' **Duration**: 1 session, av. best 2 jumps	• Augmented feedback: < vGRF (p=0.01*)
Etnoyer, 2013 (*RCT*)	♀ Recreational & varsity athletes (*n*=43; 21.47±1.55 years) randomly assigned to -*Self-feedback* (*n*=15) -*Combination* (*n*=15) feedback -*Control* (*n*=13, no feedback)	**Training:** box-DJ as pretest & landing technique feedback based on their group ○ Self-feedback: viewed 4 trials of own box-DJ (LESS criteria) ○ Combination feedback: viewed 2 trials of own box-DJ & 2 jumps of expert (LESS criteria) box-DJ & running-stop-jump transfer (post-test) **Duration:** one session plus retest after one month	• Combined feedback: > peak knee flexion compared to self-feedback at posttest (p=0.03*)

Leonard, 2021 (*Pre-Post*)	♀ basketball & volleyball local collage teams (*n*=23, 19.3±0.93) team randomized to - *Dyad feedback* (*n*=10) volleyball team - *Expert external feedback* (*n*=13) basketball team	**Training:** double-baseline VDJ testing & feedback based on condition ○ Dyad feedback: teammate corrected partner on a squat jump landing task by using a technique checklist and 5 min. instruction ○ Expert external feedback: certified athletic trainer, after >20h movement screening training, while athletes using external focus of attention **Duration:** 1 session, 5 trials	• Dyad feedback: <abduction displacement (p<0.02*) • Expert feedback: <vGRF from pre to post-test compared to dyad group (p<0.02*)
Onate, 2005 (*RCT*)	♀, ♂ Recreational athletes (*n*=51; 18-25 years), exercising ≥ 3x p.week minimal 20 min. randomly assigned to: - *Videotaped expert model augmented feedback* (expert), - *Videotaped self-model augmented feedback* (self), - *Videotaped combo model augmented feedback*, - *Non-feedback* (control)	**Training:** basketball rebounding task on jump-ball device. Instruction to 'land in their normal manner' for all groups with additional feedback (self, expert) followed by instruction: 'land as soft as possible' for all groups. ○ expert: watches expert jump landing performance ○ self: watches own jump-landing trials ○ combo: watches 2 trials expert, 3 trials own **Duration:** 3 sessions: baseline, performance, retention; 3 sets of training feedback in performance session	• Feedback groups > knee angular displacement (p=0.21*) & < peak vGRF (p=0.21*) during performance & retention • Non-feedback group < peak vertical forces across performance & retention
Shams, 2021 (*RCT*)	♀ Athletes (*n*=45), regular physical activities last 3 years (13-15 points Baecke Physical Activity Questionnaire – max. 15 points) randomly divided: -*Plyometrics & Feedback* (*n*=15; 24.0±3.9 years) -*Plyometrics & Tape* (*n*=15; 24.9±4.5 years) *Control* (*n*=15; 24.4±4.0 years. No plyometrics)	**Training:** 4 plyometric exercises combined with feedback or tape: ○ Feedback: visual feedback (full length mirror) & scripted verbal cueing at the beginning of the sessions (e.g., 'keep your knees apart from each other'). + verbal feedback during training if they did not maintain desired modification ○ Tape: mulligan tape before training session & scripted information + feedback if needed **Duration:** 2 sessions/week for 6 weeks; 2-3 sets of 10-15 repetition of the four plyometric tasks	• Improvement in LESS score in feedback & tape condition (p=0.001*)

Jump Landing Performance – Skill Training			
Shimokochi, 2016 (*Pre-Post*)	- ♀, ♂ Recreational active athletes (*n*= 20; 23.4±3.6 years). ♂ (*n*= 10; 25.4±3.8) and ♀ (*n*=10; 21.4±1.8) involved in physical activities ≥30 min. p.day, 3x p.week	**Training:** 3 landing styles (dominant leg), from a 30-cm (♀)/ 45-cm (♂) box: ○ Self-selected ○ Body leaning forward, plantarflexed position at foot contact ○ Body upright, flat-footed position **Duration:** 5 single-legged landing trials for each condition	• Flat-footed landing: < knee flexion angles & > magnitude & more landing anteriorly inclined GRF vector relative to the tibia compared to self-selected (p<0.05*) • Plantarflexed: > knee flexion° & < magnitude & more posteriorly inclined GRF vector relative to the tibia than self-selected landing (p<0.05*)
b. Dynamic Strengthening			
Plyometrics			
Dello Iacano, 2017 (*Pre-Post)*	♂ Elite handball players (*n*= 18, 23.4±4.6 years) >6 years specific jumping & sprinting, ≥ 90% trainings of last 2 seasons, assigned to: - *Vertical Alternate (VDJ)* (*n*=9) - *Horizontal Alternate (HDJ)* (*n*=9)	**Training:** VDJ or HDJ 1-leg drop jumps, landing from 25cm platform **Duration:** 2x p.week, 10 weeks, 5-8 sets, 6-10 rep, 15-30 min.	• > peak GRF (p=0.001*) VDJ compared to HDJ (p=0.004*)
Herrington, 2010 (*Pre-Post*)	♀ National league division 1 basketball players (*n*= 15, 19.1±1 year, 18-22 years)	**Training:** progressive jump-training program from bilateral to unilateral activities including different jumps (e.g., squat jumps and 180° jumps) with jump performance feedback **Duration:** 15 min. session, 3x p.week, for 4 weeks	• < Average Drop jump and jump shot knee valgus angle on the left leg (p= 0.002*; p=0.035*) & right leg (p=0.0001*; p=0.01*).
Nagano, 2011 (Pre-Post)	♀ University basketball athletes (*n*=8, 19.4±0.7 years)	**Training:** Balance and jump training (2 phases): ○ 1: technique phase, 3 basic techniques (e.g., landing on the ball of the foot with the trunk leaning forward) ○ 2: performance phase, increasing intensity & use of proper technique. **Duration:** 20 min. session, 3 days p.week for 5 weeks.	• > Knee flexion angle (post-training trial), then Pre-training 2 trial (p < 0.001*) • > absolute change knee flexion (post-training trial), then Pre-training 2 trial (p < 0.001*)
Makaruk, 2014 (*RCT*)	♂ College students (*n*=36; physically active: 8h/w) randomly assigned to: - *Single Jump* (SJG, *n*= 12, 22±1.1 years) - *Repeated Jump* (RJG, *n*=12, 22.7±1.4 years) - *Control* (CG, *n*= 12, 22.6 ± 1.8), no additional exercise	**Training:** single (SJG) or repeated jumps (RJG) ○ SJG: 4-5sec break between reps. ○ RJG: no break **Duration:** 3x p.week on non-consecutive days, 6 weeks, 4-8 sets 3 reps, 50-60 min. session after specific warm up.	• RJG: < vGRF & > knee flexion angle (p<0.01*); >knee flexion angle compared to control (p<0.05*) • SJG: < knee flexion angle (p<0.01*); >knee flexion angle compared to control (p<0.05*) • RJG vs. SJG: <GRF & >knee flexion angle in RJG

Vescovi, 2008 (*RCT*)	♀ Active college (n= 20, exercises 2-3/w) randomly assigned to: - *Training* (*n*= 10, 20.3 ±1.2 years) - *Control* (*n*= 10, 19.9 ± 1.6 years) no intervention	**Training:** Sportsmetrics™ training ○ variety of plyometric exercises, intensity increased ○ 3 phases: Technique, fundamental, performance **Duration**: 3/week, 6-weeks, 45-60 min. session	• Intervention: < vGRF compared to control (p =0.122)
Combi Strengthening			
Dai, 2015 *(Pre-Post)*	♀, ♂ recreational athletes, experienced in sports involving jump-landing (*n*= 28, 13 ♂ & 15 ♀, 21.1±2.4 years). physically active (≥ 2x p.week, 2-3h)	**Training:** jump-landing-jump task with & without resistance band around lower shank, above ankles **Duration:** 3 Trials, 30 sec rest between 2 and 3 trial	• < Initial hip flexion (p=0.028*, d=1.0), hip abduction (p<0.001*, d=0.91) and max. knee flexion (p=0.046*, d=0.17) angle • > Average hip abduction moment during pre-(p<0.001*, d =0.91) & early-landing (p<0.001*, d=1.0)
Peng, 2021 (*Pre-Post)*	♂ Collegiate division II athletes (*n*=12; 20.32±1.86 years) familiar with DJ, involved in sports, training or physical activity 5 days p.week	**Training:** DJ with elastic band loads of 0% & 20% body weight attached to the waist and heels during the airborne and landing phases from 40- & 50-cm box. Elastic bands were released before downward movement (peak knee flexion) **Duration:** one single experimental session, 4 days after familiarization session	• Hip (p=0.001*), knee flexion (p=0.0025*), & ankle plantarflexion angles (p<0.001*), at initial foot contact & ankle dorsiflex. ROM > with 20% body weight loading • Peak GRF of impact (p=0.029) & hip flexion ROM (p=0.048*) < with 20% body weight loads
Stearns & Powers, 2014 (*Pre-Post)*	♀ Recreational athletes (*n*=21; 18-25 years) physical activity ≥ 30 min. 2x p.week	**Training:** hip-focused training (3 levels, increasing difficulty) ○ Level 1: different jumps (2x20 seconds) & 2 balance exercises on BOSU® (4x30 seconds and 2x20 seconds) ○ Level 2-3: increased complexity & duration of jump/ balance task **Duration:** 20-30 min. session; 12 training sessions over 4-weeks; 1 week level 1 and 2, 2 weeks level 3 (progression only previous level managed)	Drop-jump task • Subjects landed with > peak knee (p<0.001*) and hip flexion (p=0.008*) and < knee/hip extensor moment ratio (p<.001*) • < peak knee abduction angles (p=0.04*) and average knee adductor moments (p<0.001*)
Yang, 2018 (*RCT*)	♀, ♂ Collegiate basketball (*n*=27, 18-21 years) & volleyball players (*n*=9, 18-21 years), Beijing Sport University, < 30° knee flexion in stop-jump task, ≥5 trainings p.week. Randomly assigned to: - *Intervention* (basketball: 9 ♂ & 5 ♀; Volleyball: 4 ♀)	**Training:** specific program: ○ Warm-up (trunk strengthening) ○ main exercises (hip extension training & plyometrics (e.g., jumps in different directions) ○ warm-down (muscle relaxation & static stretching) **Duration:** 3x p.week, for 4 weeks	Post-intervention tests (weeks 4,8,12 and 20) while maintaining regular training routine: • ♂: > Knee flexion angle at peak impact posterior GRF in stop-jump task (weeks 8,12, and 20 compared to week 0 and control group) (p≤0.002*) ♀: No sig. changes in knee flexion angle or GRF

	- *Control* no additional training (basketball: 8 ♂ & 5 ♀, Volleyball: 1 ♂ & 4 ♀).		
Prevention Programs			
Aerts, 2015 (*RCT*)	♀, ♂ Eligible Flemish basketball teams second and third regional divisions (Flanders, Belgium). Teams randomly assigned to: - *Intervention* (*n*= 27 ♂, 24.7±4.9 years, *n*=*26* ♀, 23.12±5.8 years), additional training - *Control* (*n*= 31 ♂, 26.8±5.4 years, *n*=32 ♀, 23±3.9 years), no additional intervention	**Training:** during warm-up for improvement of jump landing techniques based on: ○ technique (month 1, e.g., squats) ○ fundamental exercises (month 2, squat jumps) ○ performance phase (month 3, difficult increases e.g., max. squat jumps) DVD & poster with correct instruction for coaches **Duration:** 5-10 min. session, 2x p.week, for 3 months	Referring only to results for ♂ (♀ wrong age) • Intervention: improvement max. hip flexion & left knee flexion over time (p <0.05*), < right genu valgus at take-off (p<0.05*)* • Control: no sig. changes in hip and knee flexion over time
Fox, 2018 (*RCT*)	♀ Sub elite netball players randomly assigned to: - *Training* (*n*=8, 22.0±2.5 years) - *Control* (*n*= 8, 23.4±2.7 years)	**Training:** ACL prevention program for netball players (Down to earth (D2E)) ○ Home-based & supervised jump-landing exercises with Instruction (safe landing techniques) **Duration:** 15-20 min.**,** 3x p.week, for 6 weeks	• >Hip external rotation (initial contact) post-training (p<0.001*) • >Knee angular displacement in training compared to control after 6 weeks (p=0.020*) • 'High-risk' individuals (>peak knee abduction moment) <frontal knee plane moments post-training (p>0.05)
O'Malley, 2017 (*RCT*)	♂ Collegiate teams (*n*= 78, 18.4 – 18.5 years ;2 hurling & 2 football teams) training ≥ 2 p.week randomised in: - *Intervention* (*n*=41, 2 teams) *Control* (*n*=37, 2 teams) no additional intervention	**Training:** 'GAA 15' standardised warm-up program. **Duration:** 15 min., 2x p.week, 8 weeks	• Intervention: < mean LESS after training (d= 0.72, p= 0.001*) • Both groups: poor movement quality at baseline according to the LESS criteria (LESS > 6).
c. Static Strengthening			
Core Workout			
Araujo, 2015 (*Pre-Post*)	♀ Capoeira athletes (*n*= 16, 27.3±3.7 years) ≥ 2 years capoeira training completed physical activity readiness questionnaire (PAR-Q)	**Training:** plank & bridge variants, crunches, Russian twister, split legs scissors, intensity increased every 2nd week **Duration:** 3x p.week, 6-weeks, 15 min. session	• < DJ peak vGRF during 1 (=drop from the box) and 2 landing phase (=after maximal vertical jump) (p<0.001*)

Warm-up Program			
Avedesian, 2020 (*Pre-Post*)	- ♀ Volleyball athletes (*n*= 12; 19.8±1.2 years) trained 3x p.week & competed in nationally sanctioned collegiate club volleyball tournaments.	**Training:** 2 warm-up protocols ○ dynamic: 14 whole-body dynamic exercises (e.g., leg cross overs, high knee-pull, high lunge-pull) ○ Dynamic & static stretching: same dynamic exercises + 7 static stretches major lower extremity muscle **Duration:** 7 min. dynamic warm-up (30sec each exercise); 14 min. dynamic warm-up & stretching, á 30 sec stretch	• Dynamic & static stretching: < in peak hip adduction angle (non-dominant leg) from pre to 15 min. post warm-up (p=0.016*, d=0.38) • Non-dominant limb: > knee abduction (p=0.006*, d=0.38) & internal rot. angles (p=0.004*, d=0.69) during landing compared to dominant limb
d. Balance Training			
Static Balance Training			
Silva, 2018 (*RCT*)	♂ Recreational athletes (*n*= 24; 18-25 years) training ≥ 3-5x p.week, different sports (basketball, soccer, handball, volleyball). - *Intervention* (*n*= 11; 28.8±1.2 years, wobble board training) - *Control* (*n*= 9; 28.2±0.9 years, no wobble board training).	**Training:** wobble board, 15 exercises, progression if task accomplished without falling on one leg for 20 consecutive sec. Level of difficulty: • standing still → rocking in different planes → contra-lateral leg movements → single-leg squats → catching/drippling ball → eyes closed & all with < diameter mounted at ball **Duration:** 30 min., 3x p.week, 4 weeks	• No sig. group-by-time interaction (vGRF) or changes in ankle angles (plantar flexion) after training (single-leg lateral jump-task)
Dynamic Balance Training			
Letafatkar, 2019 (*RCT*)	♀ Collegiate athletes (*n*=31; 20-25 years; handball, basketball & soccer players), neuromuscular quadriceps dominance deficit (Tuck jump assessment), involved in off-season training, 3x p.week up to 120min p.session, randomly assigned: - *Experimental* (*n*=16, additional perturbation training), - *Control* (*n*=15, no additional training)	**Training:** weekly increasing perturbation drills with verbal instructions ('keep your trunk still', 'keep your knees soft', 'relax between perturbation') on different grounds: ○ Rocker board, Roller board, BOSU ball ○ Stationary perturbation drills **Duration:** 1h; 18 sessions for 6 weeks	• Training group: > initial contact flexion angle (p=0.001*) & knee flexion displacement angle (=subtracted peak knee flexion angle from initial contact flexion angle; p<0.05*) compared to pre-test & control group (Tuck Jack Assessment)

RCT= Randomized Controlled Trial, nRCT= non Randomised Controlled Trial, Pre-Post= Uncontrolled Trial, * = significant changes, p= p-value, h. = hour(s), min.= minutes, sec.= second, max= maximum, p.week= per week, p.session= per session, p.day= per day, w= week, GRF= ground reaction force, vGRF= vertical ground reaction force, x= times, LESS= Landing Error Scoring System, avg= average, box-DJ = box drop jump, CMJ= countermovement jump, DL = drop landing, DVJ= drop vertical jump, VDJ= vertical drop jump, *n*= sample size, *d*= Cohen's d, sig.= significant, ROM= range of motion

Supplementary Table 2 Search strategy including keywords, databases, applied filters, and findings (date of search: December 21st, 2021

	Keywords	Filters	Database	Findings
1	(athletes OR sports OR athletics) AND ("unilateral landing" OR "bilateral landing" OR "jump landing" OR "jump task" OR landing) AND ("intervention protocol" OR intervention OR "training protocol" OR exercise OR training OR prevention) AND (kinematics OR kinetics OR biomechanics OR "knee valgus" OR "knee flexion angle" OR "injury risk" OR "injury rate" OR "injury incidence" OR "landing error scoring system")	Clinical Trial, randomized controlled trial, language: english & german, age: 19-44 years	**MEDLINE**	130
2	(athletes OR sports OR athletics) AND ("unilateral landing" OR "bilateral landing" OR "jump landing" OR "jump task" OR landing) AND ("intervention protocol" OR intervention OR "training protocol" OR exercise OR training OR prevention) AND (kinematics OR kinetics OR biomechanics OR "knee valgus" OR "knee flexion angle" OR "injury risk" OR "injury rate" OR "injury incidence" OR "landing error scoring system")	Keywords close to each other, language: English & german	**SPORT Discus**	1365
3	(TITLE-ABSKEY (athletes OR sports OR athletics) AND TITLE-ABS-KEY ("unilateral landing" OR "bilateral landing" OR "jump landing" OR "jump task" OR landing) AND TITLE-ABSKEY ("intervention protocol" OR intervention OR "training protocol" OR exercise OR training OR prevention) AND TITLE-ABSKEY (kinematics OR kinetics OR biomechanics OR "knee valgus" OR "knee flexion angle" OR "injury risk" OR "injury rate" OR "injury incidence" OR "landing error scoring system"))	Title/ abstract/ keywords	**Scopus**	892

Supplementary Table 3 Questions used in the review to evaluate the risk of bias domains in uncontrolled (before-after) studies with no control group of training methods to reduce the risk for jump landing injuries to the lower extremity based on the work by Sterne et al., 2016

Pre-Intervention domains	
Bias due to confounding	○ Was measurement of outcomes made at sufficient pre-intervention time points? ○ Do the study authors use an appropriate analysis method that accounts for time trends and patterns? ○ Provided material for all participants identical? ○ Unintended differences in intervention performance?
Bias in selection of participants into the study	○ Intended selection of participants (e.g., males and females only)? ○ Activity level of participants similar? ○ Sage age and gender of compared groups? ○ Good health status of participant?
At-intervention domain	
Bias in classification of interventions	○ Training performance/intensity controlled by expert/supervisor/coach?
Post-intervention domains	
Bias due to deviations from intended interventions	○ Measurement of kinematics standardizes? ○ Identical warm-up for all participants? ○ Identical provided information for all participants?
Bias due to missing data	○ No loss of data? ○ Loss of data reported? ○ All results reported?
Bias in measurement of the outcome	○ Appropriate measuring of the outcome? ○ Are outcome measures assessed in valid manner? ○ Data collection directly after intervention and on a second date? ○ Were methods of outcome assessment comparable before and after the intervention?
Bias in selection of the reported result	○ All outcomes reported and evaluated? ○ Mean and SD reported?