

Supplementary material

**Effect of Tai Chi on muscle strength, physical endurance, postural balance and flexibility: a systematic review and meta-analysis**

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Table 1. Characteristics of included studies.

Author	Design	Subjects	Intervention	Measurement instruments	Outcome
Adler 2007	RCT	Older adults with osteoarthritis n = 14 (TG: 8; CG: 6) m/f: TG: 1/7; CG: 0/6 Mean age (y): TG: 70.8; CG: 72.8	TG: Wu-Style, 16 movements CG: nonphysical recreational activity (Bingo)  10 weeks, 1x 60 min./week	<ul style="list-style-type: none"> <li>• Hand-held dynamometry</li> </ul>	<ul style="list-style-type: none"> <li>• Hip flexor strength</li> <li>• Knee extensor strength</li> <li>• Knee flexor strength</li> <li>• Ankle plantarflexor strength</li> <li>• Ankle dorsiflexor strength</li> </ul>
Audette et al. 2006	RCT Single-blind	Sedentary older healthy women n = 27 (TG: 11; SG2: 8, CG: 8) m/f: TG: 0/11; SG2: 0/8; CG: 0/8 Mean age (y): TG: 71.5; SG2: 71.3; CG: 73.5	TG: Yang-Style, 10 movements SG2: Brisk walking CG: no treatment  12 weeks, 3x 60 min./week	<ul style="list-style-type: none"> <li>• Isometric hand squeezer</li> <li>• American College of Sports Medicine submaximal bicycle YMCA exercise test</li> <li>• SLS eyes open/closed</li> <li>• Standard goniometric methods</li> <li>• Sit-and-reach-Test</li> </ul>	<ul style="list-style-type: none"> <li>• Handgrip strength</li> <li>• Knee extensor strength</li> <li>• Estimated VO<sub>2</sub>max</li> <li>• Balance in single-limb stance</li> <li>• Hip joint flexibility</li> <li>• Thoracolumbar spine flexibility</li> </ul>
Chyu et al. 2010	RCT Single-blind	Postmenopausal women with osteopaenia n = 61 (TG: 30; CG: 31) m/f: TG: 0/30; CG: 0/31 Mean age (y): TG: 72.4; CG: 71.3	TG: Yang-Style, simplified 24-form CG: no treatment  24 weeks, 3x 60 min./week	<ul style="list-style-type: none"> <li>• Motor Control Test/ Adaptation Test</li> </ul>	<ul style="list-style-type: none"> <li>• Coordination and adaptation of the motor system</li> </ul>
Gatts 2008 <sup>M</sup>	RCT	Balance-impaired older adults n = 19 (TG: 11; CG: 8) m/f: TG: 1/10; CG: 1/7 Mean age (y): TG: 77.6, CG: 77.5	TG: Classical Taiji, 11 movements CG: awareness and balance education, stress reduction, deep breathing, and axial exercise.  3 weeks, 5x 90 min./week	<ul style="list-style-type: none"> <li>• SLS eyes open</li> <li>• Tandem stance eyes open</li> </ul>	<ul style="list-style-type: none"> <li>• Balance in single-limb stance</li> <li>• Balance in tandem stance</li> </ul>
Hackney & Earhart	RCT Single-blind	Individuals with Parkinson disease n = 26 (TG: 13; CG: 13)	TG: Yang-Style (Short-Form, Cheng Manching), 2 Circles	<ul style="list-style-type: none"> <li>• 6-minute-walk-test</li> <li>• SLS eyes open</li> </ul>	<ul style="list-style-type: none"> <li>• Walking distance</li> <li>• Balance in single-limb stance</li> </ul>

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Author	Design	Subjects	Intervention	Measurement instruments	Outcome
2008 <sup>M</sup>	blind	m/f: TG: 11/2; CG: 10/3 Mean age (y): TG: 64.9; CG: 62.6	CG: no treatment  10 weeks, 2x 60 min./week	• Tandem stance eyes open	• Balance in tandem stance
Hartman et al. 2000 <sup>M</sup>	RCT Single-blind	Older adults with osteoarthritis n = 33 (TG: 18; CG: 15) m/f: TG: 3/15; CG: 2/13 Mean age (y): SG: 68.6; CG: 67.5	TG: Yang-Style, 9 movements CG: no treatment  12 weeks, 2x 60 min./week	• SLS eyes open	• Balance in single-limb stance
Hwang et al. 2016	RCT Single-blind	Older adults with history of falling n = 368 (TG: 185; SG2: 183) m/f: 121/247 Mean age (y): 72.2	TG: Yang-Style, 18 movements SG2: lower extremity training  24 weeks, 1x 60 min./week	• Handgrip dynamometer	• Handgrip strength
Leung et al. 2013 <sup>M</sup>	RCT Single-blind	Individuals with COPD n = 42 (TG: 22; CG: 20) m/f: 27/15 Mean age (years): 73	TG: Sun-style, 21-form (Short-form) CG: no treatment  12 weeks, 2x 60 min./week	• Isokinetic strength • Incremental shuttle walk test • Endurance shuttle walk test	• Knee extensor strength • Cardio-pulmonary endurance • Cardio-pulmonary endurance
Li, et al. 2005 <sup>M</sup>	RCT Single-blind	Older adults n = 256 (TG: 125; CG: 131) m/f: TG: 38/87; CG: 39/92 Mean age (y): TG: 76.94; CG: 77.99	TG: Yang-Style, 24 movements CG: Stretching/Controlled Breathing/relaxation  24 weeks, 3x 60 min./week	• SLS eyes open/closed	• Balance in single-limb stance
Li et al. 2008 <sup>M</sup>	RCT	Older adults n = 50 (TG: 25; CG: 25) m/f: TG: 13/12; CG: 12/13 Mean age (y): TG: 64.9; CG: 65.6	TG: TC 24 movements CG: discuss topics of interest to older people  TG: 16 weeks, 4x 60 min./week CG: 16 weeks, 1x 60 min./week	• SLS eyes open/closed • Tandem stance eyes closed	• Balance in single-limb stance • Balance in tandem stance
Li et al. 2009	RCT Single-blind	Older adults n = 50 (TG: 25; CG: 25) m/f: TG: 13/12; CG: 12/13 Mean age (y): TG: 64.9; CG: 65.6	TG: TC 24 movements CG: discuss topics of interest to older people	• Isokinetic dynamometer (Peak torque-to-body weight ratio)	• Knee extensor strength • Knee flexor strength • Ankle plantarflexor strength • Ankle dorsiflexor strength

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Author	Design	Subjects	Intervention	Measurement instruments	Outcome
			TG: 16 weeks, 4x 60 min./week CG: 16 weeks, 1x 60 min./week		
Li et al. 2019	RCT Single-blind	Individuals with primary total knee arthroplasty due to knee osteoarthritis n = 107 (TG: 54; SG2: 53) m/f: TG: 26/28; SG2: 24/29 Mean age (y): TG: 69.6; SG2: 68.5	TG: TC 24 movements SG2: traditional physical exercises  12 weeks, 5x 45 min./week	<ul style="list-style-type: none"> <li>• 6-minute-walk-test</li> <li>• Goniometry</li> </ul>	<ul style="list-style-type: none"> <li>• Walking distance</li> <li>• Knee range of motion</li> </ul>
Liu et al. 2012	RCT	Older adults n = 42 (TG: 15; SG2: 10; CG: 17) m/f: TG: 7/8; SG2: 4/6; CG: 7/10 Mean age (y): TG: 68.0; SG2: 68.8; CG: 69.8	TG: Yang-Style, 24 movements SG2: Proprioceptive Exercise CG: no treatment  16 weeks, 2x 45 min./week	<ul style="list-style-type: none"> <li>• Isokinetic dynamometer (Peak torque-to-body weight ratio)</li> </ul>	<ul style="list-style-type: none"> <li>• Ankle plantarflexor strength</li> <li>• Ankle dorsiflexor strength</li> </ul>
Lu et al. 2013	RCT	Older women n = 31 (TG: 15; CG: 16) m/f: TG: 0/15; CG: 0/16 Mean age (y): TG: 73.9; CG: 68.9	TG: Yang-Style, 12 movements CG: music, English, and handicrafts classes  16 weeks, 3x 90 min./week	<ul style="list-style-type: none"> <li>• Isokinetic dynamometer (Peak torque-to-body weight ratio)</li> </ul>	<ul style="list-style-type: none"> <li>• Knee extensor strength</li> <li>• Knee flexor strength</li> </ul>
Mustian et al. 2006 <sup>M</sup>	RCT	Breast Cancer Survivors n = 21 (TG: 11; CG: 10) m/f: TG: 0/11; CG: 0/10	TG: Yang-Style (traditional, 104 long form), 15 movements CG: psychosocial support therapy  12 week, 3x 60 min./week	<ul style="list-style-type: none"> <li>• Handgrip dynamometry</li> <li>• 6-minute-walk-test</li> <li>• Goniometric measurements</li> </ul>	<ul style="list-style-type: none"> <li>• Handgrip strength</li> <li>• Walking distance</li> <li>• Shoulder joint flexibility</li> </ul>
Ni et al. 2014	RCT	Older adults with history of falling n = 39 (TG: 11; SG2: 15; SG3: 13) m/f: TG: 2/9; SG2: 2/13; SG3: 3/10 Mean age (y): TG: 70.27; SG2: 77.80; SG3: 73.23	TG: Chen-Style, 18 movements SG2: Standard balance program SG3: Yoga  12 weeks, 2x 60 min./week	<ul style="list-style-type: none"> <li>• SLS eyes open</li> </ul>	<ul style="list-style-type: none"> <li>• Balance in single-limb stance</li> </ul>
Suksom et	RCT	Older women	TG: TC simplified 24-form	<ul style="list-style-type: none"> <li>• One repetition maximum</li> </ul>	<ul style="list-style-type: none"> <li>• Biceps muscle strength</li> </ul>

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Author	Design	Subjects	Intervention	Measurement instruments	Outcome
al. 2011		n = 30 (TG: 14; SG2: 16) m/f: TG: 0/14; SG2: 0/16 Mean age (y): TG: 69.5; SG2: 70.3	SG2: Exercise with a Flexible stick  12 weeks, 4x 40 min./week	• Modified Bruce treadmill protocol	• Triceps muscle strength • Knee extensor strength • Knee flexor strength • VO <sub>2</sub> max
Sun et al. 2015 <sup>M</sup>	RCT	Older adults n = 138 (TG: 72; CG: 66) m/f: TG: 14/58; CG: 20/46 Mean age (y): TG: 68.3; CG: 70.1	TG: Yang-Style, 24-form CG: playing cards or singing  24 weeks, 2x 60 min./week	• Handheld dynamometer • SLS eyes open	• Handgrip strength • Balance in single-limb stance
Sun et al. 2018 <sup>M</sup>	RCT Single-blind	Older women n = 36 (TG: 12; SG2: 13; CG: 11) m/f: TG: 0/12; SG2: 0/13; CG: 0/11 Mean age (y): TG: 64.12; SG2: 63.26, CG: 65.36	TG: Yang-Style, 24-form SG2: Brisk walking CG: no treatment  16 weeks, 5x 60 min./week	• SLS eyes open/closed	• Balance in single-limb stance
Taylor-Piliae et al. 2010 <sup>M</sup>	RCT Single-blind	Older adults n = 132 (TG: 37; SG2: 39; CG: 56) m/f: TG: 13/24; SG2: 11/28; CG: 15/41 Mean age (y): TG: 70.6; SG2: 68.5; CG: 68.2	TG: Yang-Style, 24 postures SG2: Western Exercise CG: "healthy aging" classes  SG: 24 weeks, 2x 60 min./week, homebased 3x/week CG: 24 weeks, 1x 90 min./week	• SLS eyes open • Sit-and-reach test	• Balance in single-limb stance • Thoracolumbar spine flexibility
Wang 2008 <sup>M</sup>	RCT Single-blind	Individuals with rheumatoid arthritis n = 20 (TG: 10; CG: 10) m/f: TG: 2/8; CG: 3/7 Mean age (y): TG: 48; CG: 51	TG: Yang-Style, 24 movements CG: Stretching and Wellness Education  12 weeks, 2x 60 min./week	• Hand dynamometer	• Handgrip strength
Wang et al. 2010 <sup>M</sup>	RCT Single-blind	Individuals with fibromyalgia n = 66 (TG: 33; CG: 33) m/f: TG: 5/28; CG: 4/29 Mean age (y): TG: 49.7; CG: 50.5	TG: Yang-Style, 10 movements CG: didactic lesson and stretching exercises  12 weeks, 2x 60 min./week	• 6-minute-walk-test	• Walking distance

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Author	Design	Subjects	Intervention	Measurement instruments	Outcome
Wang et al. 2018 <sup>M</sup>	RCT Single-blind	Individuals with COPD n = 50 (TG: 26; CG: 24) m/f: TG: 23/3; CG: 21/2 Mean age (y): TG: 67.83; CG: 67.86	TG: Yang-Style, 10 movements CG: no treatment  12 weeks, 3x 60 min./week	• 6-minute-walk-test	• Walking distance
Wolf et al. 2003 <sup>M</sup>	RCT	Older adults n = 162 (TG: 58; SG2: 50; SC: 54) m/f: 38/162 (Baseline) Mean age (y): 76.2 (Baseline)	TG: Yang-Style, 10 movements SG2: computerized balance training CG: discuss topics of interest  TG: 15 weeks, 2x 45 min./week SG2: 15 weeks, 1x 45 min./week CG: 15 weeks, 1x 60 min./week	• Hand dynamometer • 12-minute-walk-test	• Handgrip strength • Walking distance
Wong et al. 2018 <sup>M</sup>	RCT Single-blind	Women with fibromyalgia n = 31 (TG: 17; CG: 14) m/f: TG: 0/17; CG: 0/14 Mean age (y): TG: 51; CG: 51	TG: Yang-Style, 10 movements CG: no treatment  12 weeks, 3x 55 min./week	• One-repetition maximum • Sit and reach	• Knee extensor strength • Thoraco-lumbar spine flexibility
Woo et al. 2007 <sup>M</sup>	RCT Single-blind	Older adults n = 176 (TG: 58; SG2: 59; CG: 59) m/f: TG: 30/28; SG2: 29/30; CG: 29/30 Mean age (y): TG: 68.2/69.67; SG2: 68.67/69.57; CG: 68.07/69.27	TG: Yang-Style, 24 movements SG2: Resistance Training (TheraBand exercise) CG: no treatment  12 month, 3x/week	• Handgrip dynamometer • Isometric dynamometer • SLS eyes open • Tandem stance eyes open	• Handgrip strength • Knee extensor strength • Balance in single-limb stance • Balance in tandem stance
Zhang et al. 2006 <sup>M</sup>	RCT	Older adults with lower ability for maintaining balance n = 47 (TG: 24; CG: 23) m/f: TG: 12/12; CG: 13/10 Mean age (y): TG: 70.2; CG: 70.6	TG: TC simplified 24-form CG: no treatment  8 weeks, 7x 60 min./week	• SLS eyes open • Stand and reach	• Balance in single-limb stance • Thoracolumbar spine flexibility
Zheng, Lan et al. 2015 <sup>M</sup>	RCT Single-blind	Students 16 – 25 years n = 198 (TG: 95; CG: 103) m/f: TG: 33/62; CG: 32/71 Mean age (y): TG: 20.7; CG: 20.6	TG: TC simplified 24-form CG: no treatment  12 weeks, 5x 60 min./week	• Sit and Reach	• Thoracolumbar spine flexibility

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Author	Design	Subjects	Intervention	Measurement instruments	Outcome
Zou et al. 2017	RCT Single-blind	Older women n = 61 (TG: 32; CG: 29) m/f: TG: 0/32; CG: 0/29 Mean age (y): TG: 67.9; CG: 67.4	TG: Yang-Style, simplified 24-form CG: no treatment  8 weeks, 3x 90 min./week	• Goniometer	• Hip flexion • Plantar flexion of the foot
Zou, Loprinzi et al. 2019	RCT	Adults over 55 years n = 78 (TG1: 40; TG2: 38) m/f: TG1: 18/22; TG2: 19/19 Mean age (y): TG1: 59.55; TG2: 58.26	TG1: Yang-Style, 24-form TG2: Chen-Style, 18 postures  week 1-6: 3x 60 min./week week 7-12: 5x 90 min./week	• SLS eyes closed	• Balance in single-limb stance
Zhou, Zhang et al. 2019	RCT Single-blind	Adults over 60 years n = 57 (TG1: 19; TG2: 20; TG3: 18) m/f: TG1: 9/10; TG2: 10/10; TG3: 9/9 Mean age (y): TG1: 67.4; TG2: 64.9; TG3: 64.5	TG1: Yang-Style, 24-form TG2: 42-form TG3: Chen-Style, 56-form  week 1-6: 3x 60 min./week week 7-12: 5x 90 min./week	• SLS eyes closed	• Balance in single-limb stance

TG = Tai Chi group, SG = study group, CG = control group, y = years, m/f = male/female, COPD = chronic obstructive pulmonary disease, VO<sub>2</sub>max = maximal oxygen consumption, SLS = Single leg stance, <sup>M</sup> = Included in meta-analysis.

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Table 2. Results of the outcomes not used in the meta-analysis.

Author	Outcome	Tai Chi			Control		
		Pre	Post	Diff	Pre	Post	Diff
Adler 2007	Hip flexor strength [kg/kg weight]	0.14 ± 0.04	0.17 ± 0.04		0.15 ± 0.05	0.14 ± 0.04	
	Knee flexor strength [kg/kg weight]	0.16 ± 0.04	0.19 ± 0.04		0.14 ± 0.03	0.14 ± 0.03	
	Ankle plantarflexor strength [kg/kg weight]	0.17 ± 0.03	0.15 ± 0.02		0.16 ± 0.04	0.15 ± 0.02	
	Ankle dorsiflexor strength [kg/kg weight]	0.06 ± 0.03	0.07 ± 0.01		0.05 ± 0.01	0.06 ± 0.02	
Audette et al. 2006	Handgrip strength <sup>a</sup> [Nm]	14.5 ± 3.45		2.09 *	No control	No control	No Control
	Knee extensor strength <sup>a</sup> [Nm]	68.0 ± 14.9		8.17 ± 9.28 *	No control	No control	No control
	Estimated VO <sub>2</sub> max [ml/min/kg weight]	21.55 ± 5.20		4.2 ± 3.03 *	26.08 ± 8.3		-4.4 ± 3.01
	Balance in single-limb stance, eyes open <sup>a</sup> [s]	25.5 ± 25.80		12.50 ± 26.91	No control	No control	No control
	Balance in single-limb stance, eyes closed <sup>a</sup> [s]	2.35 ± 1.60		4.00 *	No control	No control	No control
	Thoraco-lumbar spine flexibility [in]	0.64 ± 4.00		2.30 ± 3.00*	No control	No control	No control
Gatts 2008	Balance in tandem stance, eyes open <sup>a</sup> [s]			12.08 *			2.27
Hackney & Earhart 2008	Balance in tandem stance, eyes open [s]			8.3 ± 14.1			-11.6 ± 24.5

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Author	Outcome	Tai Chi			Control		
		Pre	Post	Diff	Pre	Post	Diff
Hwang et al. 2016	Handgrip strength [kg]	22.6 ± 9.3	23.9 ± 9.1*		No control	No control	No control
Leung et al. 2013	Incremental shuttle walk test [m]	349 ± 136	388 ± 135	39 ± 34	402 ± 179	386 ± 169	-16 ± 39
	Endurance shuttle walk test [s]	467 ± 276	803 ± 364	336 ± 287	442 ± 334	430 ± 383	-12 ± 181
Li et al. 2005	Balance in single-limb stance, eyes closed <sup>a</sup> [s]	1.78 ± 1.35	3.25 ± 2.26 *		1.93 ± 2.11	1.61 ± 1.09	
Li et al. 2008	Balance in single-limb stance, eyes open [s]	3.35 ± 2.82	6.42 ± 4.59		4.29 ± 3.34	4.88 ± 4.09	
	Balance in tandem stance, eyes closed [s]	30.50 ± 20.92	43.54 ± 21.87		37.10 ± 21.33	41.63 ± 20.15	
Li et al. 2009	Knee flexor strength [N/kg weight]		85.60 ± 17.14	15.12 ± 12.38 *		83.20 ± 22.11	7.09 ± 12.08 *
	Ankle plantarflexor strength [N/kg weight]		77.08 ± 23.10	14.21 ± 12.09 *		72.13 ± 14.70	9.85 ± 10.26 *
	Ankle dorsiflexor strength [N/kg weight]		18.85 ± 4.32	1.22 ± 3.54		19.07 ± 5.03	-0.74 ± 2.66
Li et al. 2019	Walking distance [m]	417.2 ± 51.4	467.1 ± 51.4 *		No control	No control	No control
	Knee flexion (degree)	109.1 ± 14.8	112.1 ± 14.8		No control	No control	No control
	Knee extension (degree)	2.5 ± 0.2	1.5 ± 0.3		No control	No control	No control
Liu et al. 2012	Ankle plantarflexor strength <sup>a</sup> [N/kg weight]	0.82 ± 0.10	1.00 ± 0.10		0.90 ± 0.50	0.87 ± 0.07	
	Ankle dorsiflexor strength <sup>a</sup> [N/kg weight]	0.25 ± 0.02	0.33 ± 0.04		0.27 ± 0.02	0.24 ± 0.03	

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Author	Outcome	Tai Chi			Control		
		Pre	Post	Diff	Pre	Post	Diff
Lu et al. 2013	Knee flexor strength [Nm/kg weight]	0.34 ± 0.22	0.37 ± 0.21		0.38 ± 0.11	0.39 ± 0.16	
Ni et al. 2014	Balance in single-limb stance, eyes open <sup>a</sup> [s]	17.31 ± 3.78	26.66 ± 6.95 *		No control	No control	No control
Suksom et al. 2011	Biceps muscle strength [kg]	4.7 ± 1.1	5.7 ± 1.3	1.0	No control	No control	No control
	Triceps muscle strength [kg]	11.7 ± 2.1	12.3 ± 3.5	1.6	No control	No control	No control
	Knee extensor strength [kg]	8.2 ± 4.7	10.0 ± 2.0	2.1 *	No control	No control	No control
	Knee flexor strength [kg]	16.4 ± 5.9	18.69 ± 5.3	2.3 *	No control	No control	No control
	VO <sub>2</sub> max [ml/kg/min]	19.9 ± 3.5	20.7 ± 4.1	2.8	No control	No control	No control
Sun et al. 2018	Balance in single-limb stance, eyes closed [s]	16.78 ± 7.10	39.95 ± 11.67 *		18.26 ± 7.63	19.11 ± 8.19	
Wolf et al. 2003	Walking distance [mile]	0.57 ± 0.09	0.55 ± 0.10 *	-0.02 *	0.57 ± 0.08	0.58 ± 0.11	0.01
Woo et al. 2007	Balance in tandem stance, eyes open <sup>b</sup>			19.88 ± 8.09			23.33 ± 8.03
Zou et al. 2017	Hip flexion (degree)	70.0 ± 6.8	91.9 ± 8.0 *		69.5 ± 3.7	69.9 ± 4.5	
	Plantar flexion of the foot (degree)	41.6 ± 5.3	49.7 ± 3.1 *		42.0 ± 4.2	42.7 ± 7.4	
Zou, Loprinzi et al. 2019	Balance in single-limb stance, eyes closed <sup>a</sup> [s]	3.58 ± 2.39 3.77 ± 2.94 <sup>CTJ</sup>	4.76 ± 2.40 6.39 ± 3.39		No control	No control	No control
Zhou, Zhang et al. 2019	Balance in single-limb stance, eyes closed <sup>a</sup> [s]	4.00 ± 2.85 2.10 ± 1.45 <sup>42-form</sup> 3.35 ± 1.95 <sup>CTJ</sup>	5.10 ± 2.80 3.50 ± 1.70 3.75 ± 2.00		No control	No control	No control

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<sup>a</sup> = Calculated mean values of left and right side, <sup>b</sup> = Calculated mean values of men and women, \* = Significant change reported ( $p < 0.05$ ), <sup>CTJ</sup>  
= Chen Style, <sup>42-form</sup> = 42-form.

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Table 3. Risk of bias.

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective outcome reporting? (reporting bias)	Other biases
Adler 2007	Low risk	Low risk	High risk	Unclear	Low risk	Low risk	Low risk
Audette et al. 2006	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Chyu et al. 2010	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Gatts 2008	Low risk	Unclear	High risk	Unclear	Unclear	Low risk	Low risk
Hackney & Earhart 2008	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Hartman et al. 2000	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	Unclear
Hwang et al. 2016	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Leung et al. 2013	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Li, et al. 2005	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Li et al. 2008	Unclear	Unclear	High risk	Unclear	Low risk	Low risk	Low risk
Li et al. 2009	Unclear	Unclear	High risk	Low risk	Low risk	Low risk	Low risk
Li et al. 2019	Low risk	Low risk	High risk	Unclear	Low risk	Low risk	Low risk
Liu et al. 2012	Low risk	Low risk	High risk	Unclear	Low risk	Low risk	Low risk
Lu et al. 2013	Unclear	Unclear	High risk	Unclear	Low risk	Low risk	Low risk
Mustian et al. 2006	Low risk	Low risk	High risk	Unclear	Low risk	Low risk	Low risk
Ni et al. 2014	Unclear	Unclear	High risk	Unclear	Low risk	Low risk	Low risk
Suksom et al.	Unclear	Unclear	High risk	Unclear	Low risk	Low risk	Low risk

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	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective outcome reporting? (reporting bias)	Other biases
2011							
Sun et al. 2015	Low risk	Low risk	High risk	Unclear	Low risk	Low risk	Low risk
Sun et al. 2018	Low risk	Low risk	High risk	Unclear	Low risk	Low risk	Low risk
Taylor-Piliae et al. 2010	Unclear	Unclear	High risk	Low risk	Low risk	Low risk	Low risk
Wang 2008	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Wang et al. 2010	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Wang et al. 2018	Low risk	Low risk	High risk	Low risk	Unclear	Low risk	Low risk
Wolf et al. 2003	Low risk	Unclear	High risk	Unclear	Unclear	High risk	High risk
Wong et al. 2018	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Woo et al. 2007	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Zhang et al. 2006	Low risk	Low risk	High risk	Unclear	Low risk	Low risk	Low risk
Zheng et al. 2015	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Zou et al. 2017	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	Low risk
Zou, Loprinzi et al. 2019	Low risk	Low risk	High risk	High risk	Low risk	Low risk	Low risk
Zhou, Zhang et al. 2019	Low risk	Unclear	High risk	Low risk	Low risk	Low risk	Low risk

Generated with the Cochrane data collection form for intervention reviews (Cochrane Collaboration, 2014)

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