

Supplementary Table 1: Description of studies

Author, Year	Timing	N	Intervention	Length (weeks)	Follow-up (weeks)	Primary Outcome	Other Outcomes (Tool)
Aerobic Exercise Only							
Al-Majid, 2015 ¹	During	14	Sup Aer	Tx, 9-12	3-4 postTx	Feasibility	VO _{2 peak} (Max TM), Hb, IL-6, IL-10, cortisol, MPO
Anulika Aweto, 2015 ²	NR	54	Sup Aer	12	3, 6, 9	NR	RBP, RHR, SaO ₂ , FVC, Predicted VO _{2 max} (equation)
Courneya, 2003 ³	After	53	Sup Aer	15		VO _{2 peak} (Max cycle), QoL (FACT-B)	VO ₂ & PPO at VEO ₂ /VECO ₂ ; BW, BMI, BC (SSF)
Daley, 2007 ⁴	After	108	Sup Aer	8	24	QoL (FACT-G)	Aer fitness (SSWT); BW, %BF (BIA)
Dolan, 2016 ⁵	After	33	Sup Aer (Int) Sup Aer (Cont)	6	12 (SR only)	VO _{2 peak} (Max TM)	BW; WC; HC; RHR; 1RM (leg press); Insulin, glucose, hs-CRP, HOMA-IR
Drouin, 2005 ⁶	During	21	Home Aer	7		VO _{2 peak} (Max TM); Fatigue (PFS)	
Giallauria, 2016 ⁷	After	94	Sup Aer	52	104, 260 planned	Recurrence	BMI, WC, BP, TC, TG, HDL, LDL, glucose, insulin, apolipoprotein B, hs-CRP, HOMA, IL-6, VO _{2 peak} (Max TM), Ventilatory Aer Threshold, VE/VCO ₂ , endothelial function
Hornsby, 2014 ⁸	During	20	Sup Aer	12		Safety (Tx and Ex AE)	VO _{2 peak} (Max cycle); resting ECG, O ₂ pulse, endothelial function, progenitor cells, serum cytokines, tumour blood flow/perfusion, MO, eosin, tumour microvessel/vasculature/ cell proliferation; tumor gene expression
Irwin, 2009 ⁹	After	75	Sup + Home Aer	24		NR	BW, WC, HC, BF, LBM, BMD, BMC (DXA)
Kim, 2006 ¹⁰	During	41	Sup Aer	8		VO _{2 peak} (Max TM), RHR, RBP, Max HR, BP,	
Matthews, 2007 ¹¹	After	36	Home Aer	12		NR	BW, BMI, LBM, FM, %BF (BIA or DXA)
Mehnert, 2011 ¹²	After	63	Sup Aer + Other	10		NR	VO _{2 peak} (Max cycle)
Milecki, 2013 ¹³	During	66	Sup Aer	6		NR	Aer fitness (6MWT), Resting and post-ex SO ₂ , HR, BP
Mock, 1994 ¹⁴	During	14	Home Aer	NR		NR	Aer fitness (12MWT)
Mock, 1997 ¹⁵	During	46	Home Aer	6		NR	Aer fitness (12MWT)
Mock, 2005 ¹⁶	During	119	Home Aer	Tx, ~6-24		Fatigue (PFS)	Aer fitness (12MWT)
Mowafy, 2016 ¹⁷	During	40	Sup Aer	16		NR	VO _{2 max} (Tool NR), leukocytes
Murtezani, 2014 ¹⁸	After	62	Sup Aer	10		QoL (FACT-B)	BW, BMI, Aer fitness (12MWT)
Naraphong, 2015 ¹⁹	During	23	Home Aer	12	4, 7, 10	NR	Aer fitness (12MWT)
Nikander, 2007 ²⁰	During	30	Sup + Home Aer	12		Figure-8 run, Strength (Max isoM arm flex, leg ext)	Aer fitness (2k walk time) ; Ground reaction forces
Pinto, 2003 ²¹	After	24	Sup Aer	12		NR	Aer fitness (Max cycle): PPO, RPE at 75W, BP & HR at rest, 75W, peak
Pinto, 2005 ²²	After	86	Home Aer	12	24, 36	NR	Aer fitness (1MW), BMI, BW, BF (SSF)
Rogers, 2009 ²³	After	41	Sup to Home Aer	12		Feasibility	Aer Fitness (Submax TM); Strength (back/leg dyn, grip strength); BMI, WC, HC, BF, BMD (DXA)
Rogers, 2015 ²⁴	After	222	Sup to Home Aer	12	26, 52	PA	VO _{2 peak} (Submax TM); Strength (back/leg dyn), BMI, WC, HC
Saarto, 2012 ²⁵	After	573	Sup + Home Aer	52	26	BMD (lumbar spine, femoral neck, DXA)	Aer fitness (2KmWT); Figure-8 run; BW, BMI, FM, LBM, BMC (DXA); Subgroup (n = 67), BMD (pQCT scan), leg strength (isoM leg ext), grip strength, jump force
Segal, 2001 ²⁶	During	123	Sup Aer Home Aer	26		NR	Aer fitness (mCAFT); BW
Swisher, 2015 ²⁷	After	28	Sup + Home Aer	12		BMI, BW, WC, HC, BF% (SSF)	VO _{2 peak} (Max TM); IL-6, TNF-a, CRP, leptin, adiponectin, insulin
Wang, 2011 ²⁸	During	72	Home Aer	6	4x during	Feasibility	Aer fitness (6MWT)
Resistance Exercise Only							
Cormie, 2013 ²⁹	After	62	Sup Res (High) Sup Res (Low)	12		Lymphedema	Grip strength, 1RM & muscular endurance(chest press, seated row, leg press)
Hagstrom, 2016 ³⁰	After	39	Sup Res	16		Immunology	1RM (Leg press); upper body strength (isoM MVC, chest press); % BF (Yuhasz formula), BMI
Schmidt, 2012 ³¹	After	33	Sup Res	26 (12)		NR	Aer fitness (step test); BW, BMI
Schmidt, 2015a ³²	During	101	Sup Res	12	7, 26 planned	Fatigue (FAQ)	BC (BIA), BW, Strength (isoM, isoK shoulder rotation, knee flex, ext), VO _{2 peak} (Max cycle)
Schmitz, 2005 ³³	After	85	Sup Res	52		%BF & LBM (DXA)	BW, BMI, WC, BMD (DXA); Fasting glucose, insulin, HOMA-IR, IGF-axis proteins
Schmitz, 2009 ³⁴	After	141	Sup Res	52		Arm/hand swelling	1RM (bench press, leg press), BW, BMI, %BF, FM, LBM (DXA)

Steindorf, 2014 ³⁵	During	155	Sup Res	12	7, 20, 38, 64 planned	Fatigue (FAQ)	Strength (IsoM & isoK knee flex/ext, shoulder int/ext rotation), VO _{2 peak} (Max cycle), BC (BIA), BW, WC, HC, cortisol, CRP, F2-isoprostane and 8-oxo-dG, FoxP3+ CD25+ regulatory T-cells and circulating lymphocytes
Twiss, 2009 ³⁶	After	223	Home Res	104	156	BMD (DXA)	Strength (Peak torque @ 60°, knee, hip, wrist flex & ext), balance (TBTW); falls incidence
Winters-Stone, 2011 ³⁷	After	106	Sup + Home Res + Impact	52	26, 104	BMD (femur, lumbar spine), LBM, FM (DXA); Bone turnover (osteocalcin, DOP cross-links)	1RM (leg press, chest press), grip strength, PPB
Winters-Stone, 2013 ³⁸	After	71	Sup + Home Res + Impact	52		NR	BMD (femur, lumbar spine), LBM, FM (DXA), bone turnover (osteocalcin, DOP cross-links), 1RM (leg press, chest press)
Aerobic and Resistance Exercise							
Anderson, 2012 ³⁹	Post-Sx	104	Sup + Home Aer + Res	12 (Int) 52 (Taper)	64, 78	Aer fitness (6MWT), QoL (FACT-B)	
Battaglini, 2007 ⁴⁰	During	20	Sup Aer + Res	16		NR	%LBM, BF (SSF); Sum 1RM (leg ext, curl, lat pulldown, chest press)
Campbell, 2005 ⁴¹	During	22	Sup Aer + Res	12		NR	Aer fitness (12MWT)
Cantarero-Villanueva, 2013 ⁴²	After	68	Sup Aer + Res (Aqua)	8	34	Fatigue (PFS)	Sit-to-stand test, trunk curl test
Casla, 2015 ⁴³	After	94	Sup Aer + Res	12	38	VO _{2 peak} (Submax TM)	Strength (Strength index); 8RM, endurance (chest press, leg ext, BW, BMI, WC, HC, WHR)
Cornette, 2016 ⁴⁴	During	44	Home Aer + Res	27	54	VO _{2 peak} (Max cycle)	Aer fitness (6MWT), strength (Quadriceps isoM MVC)
Deluca, 2016 ⁴⁵	After	20	Sup Aer + Res	24		Feasibility	BW, BMI, BC (BIA), VO _{2 peak} (Submax cycle), est 1RM (leg press, leg ext, leg curl, shoulder press, vertical traction)
Demark-Wahnefried, 2008 ⁴⁶	During	90	Home Aer + Res	24		Feasibility	BW, BMI, WC, BF, FM, LBM, BMD (DXA), insulin, proinsulin, SHBG, CRP, IGF-1, IL-1B, TNFR2, LDL, HDL
Do, 2015 ⁴⁷	After	212	Sup Aer + Res	4	2, 6, 8	NR	Aer fitness (PO @ 85% HRmax, cycle), strength (isoM; HHD elbow flex, hip flex, abd, ext, knee ext, flex)
Galiano-Castillo, 2016 ⁴⁸	After	81	Telerehab Aer + Res	8	34	Tele-health effectiveness	Grip strength; IsoM abdominal strength; IsoM back strength; Sit-to-stand
Greenlee, 2013 ⁴⁹	After	42	Curves (unSup) Aer + Res	26	12, 38, 52	BW	WC, HC, BC (DEXA), VO _{2 peak} (TM), TC, HDL, LDL, TG, CRP, glucose, HOMA-IR, ghrelin, adiponectin, IGF-1, IGFBP-1, 3
Haines, 2010 ⁵⁰	During	89	Home Aer + Res	26	52	QoL (Economic evaluation)	BC (BIA); Balance (Functional reach); Aer fitness (Step test, 6MWT); Grip strength
Hayes, 2013 ⁵¹	During	194	Home Aer + Res (Tel)	34	26, 52	QoL (FACT-B)	Aer fitness (Step test); Strength/endurance (upright row + shoulder press); BMI
Heim, 2007 ⁵²	During	63	Home Aer + Res (FtF)	Inpatient rehab	12	NR	Aer Fitness (Step Test), Strength (Max isoM leg ext, arm flex)
Herrero, 2006 ⁵³	After	16	Sup Aer + Res	8		NR	VO _{2 peak} (Max cycle), Muscle endurance (bench press, leg press), Sit-Stand Test; BW, FM, LBM, %BF (SSF)
Husebo, 2014 ⁵⁴	During	67	Home Aer + Res	CT, 18-24	26-postCT	NR	Aer fitness (6MWT)
Irwin, 2015 ⁵⁵	After	121	Sup Res + Home Aer	52	12, 26, 38	Arthralgia (BPI, WOMAC, DASH), Grip strength	VO _{2 peak} (Max TM); BW, BMI, FM, LBM, %BF, BMD (DXA)
Kaltsatou, 2011 ⁵⁶	After	27	Sup Aer + Res	24		NR	Aer fitness (6MWT), grip strength, RHR, RBP
Kim, 2016 ⁵⁷	After	43	Home Aer + Res	26		BMD (DXA)	Strength (grip strength, sit-stand, wall squat); Aer fitness (6MWT)
Ligibel, 2008 ⁵⁸	After	82	Home Aer + Sup Res	16		Fasting insulin	BW, BMI, WC, HC, BF (BIA)
Martin, 2013 ⁵⁹	After	26	Sup Aer + Res (Trad)	8		NR	Muscular endurance (Reps on push-up and curl-up test; Dynamic Muscular Endurance Test Battery for Cancer Patients of Various Ages)
Milne, 2008 ⁶⁰	After	58	Sup Aer + Res (Mve)	12	18, 24	QoL (FACT)	Aer Fitness (Submax cycle) Strength (weight used for bicep curl, leg press, chest ext)
Mutrie, 2007 ⁶¹	During	203	Sup Aer + Res	12	24	NR	Aer fitness (12MWT); BMI; Shoulder mobility test

Naumann, 2012 ⁶²	After	43	Sup Aer + Res	8		NR	BW, BMI, BC (SSF), VO _{2 peak} (Submax TM), Strength (YMCA bench press test, 1RM, leg press, seated leg press)
Nieman, 1995 ⁶³	After	12	Sup Aer + Res	8		Natural Killer Cell Cytotoxic Activity	Aer fitness (6MWT, HR @ submax TM); Strength (leg ext)
Portela, 2008 ⁶⁴	After	34	Sup Aer + Res	26	13	Feasibility	Aer fitness (12MWT), grip strength, BMI
			Home Aer + Res				
Rahnama, 2010 ⁶⁵	After	29	Sup Aer + Res	15		NR	BW, BMI, WHR, VO _{2 peak} (Max TM), SBP, Insulin, glucose, HOMA-IR, HDL, TG, RHR
Rao, 2012 ⁶⁶	During	10	Sup Aer + Res	CT, 16-26		Feasibility	Ki-67, IGF-1, C-peptide, tumor size, lymph node status, BMI
Rogers, 2013 ⁶⁷	After	28	Sup to Home Aer + Res	12		NR	Aer fitness (VO _{2 peak} , submax TM test); Strength (back/leg dynamometer); BMI, WHR, BC (BIA); IL-1b, IL-6, IL-8, IL-10, TNF-a, adiponectin, leptin
Rogers, 2014 ⁶⁸	After	46	Sup + Home Aer + Res	12		Fatigue (FSI, PROMIS Fatigue)	BW, BMI, WC, HC, WHR, BF (BIA), Strength (leg ext), VO _{2 peak} (Submax TM), IL-6, IL-8, IL-10, TNFa
Scott, 2013 ⁶⁹	After	90	Sup Aer + Res	24		BW, BMI, WC, WHR, %BF (BIA)	Aer fitness (SSWT); RBP, testosterone, SHBG, glucose, hs-CRP, TC, HDL, estradiol, estrone, insulin, HOMA-IR, IGF-1, IGFBP-1, IGFBP-3, leptin, cortisol, IL-6, TNF-a, lymphocyte phenotype, NK cell cytotoxicity, lymphocyte proliferation
Travier, 2015 ⁷⁰	During	204	Sup + Home Aer + Res	18	36	Fatigue (MFI, FQL)	VO _{2 peak} (Max cycle); BW, Lower body strength (peak torque, 60/180°/s, cybex), grip strength, BW
Uhm, 2017 ⁷¹	After	356	Home Aer + Res	12	6	QOL (EORTC-QLQ)	BMI, SBP, DBP, HR, Upper and lower extremity strength (grip strength, chair stands), Aer capacity (2minWT)
Visovsky, 2014 ⁷²	During	19	Home Aer + Res	12	4, 8, 24	NR	Functional ability (TUG)
Aerobic or Resistance Exercise (Multi-Arm Trials)							
Buchan, 2016 ⁷³	After	41	Sup + Home Aer	12	24	Lymphedema	Lower body endurance (Squat test), 4-6RM (Bench press), handgrip; Aer fitness (6MWT), FM, LBM (DXA)
			Sup + Home Res				
Courneya, 2007 ⁷⁴	During	242	Sup Aer	CT, ~17		QoL (FACT-An)	VO _{2 peak} (Max TM); 1RM (bench press, leg ext); BW, BF, LBM (DXA); Lymphedema; CT completion
			Sup Res				
Courneya, 2013 ⁷⁵	During	301	Sup Aer (High)	CT, ~16	26, 52,	Physical function (SF-36)	VO _{2 peak} (Max TM); 1RM (bench press, leg press); Muscular endurance (# reps of 50% 1RM); BW, %BF, LBM (DXA), CT completion
			Sup Aer (Low)		104		
			Sup Aer + Res				
Musanti, 2012 ⁷⁶	After	55	Home Aer	12		Self-esteem	VO _{2 peak} (Submax TM); 6RM (chest press, seated row, leg press); Muscular endurance (curl-up test, YMCA bench press); Flexibility, %BF (BIA); BW
			Home Res				
			Home Aer + Res				
Schmidt, 2015b ⁷⁷	During	67	Sup Res	12		NR	Muscular strength (pull down, bench press, leg press, isoM MVC); PPO, RPE @ 100W, peak (Submax cycle test)
			Sup Aer				
Schwartz, 2007 ⁷⁸	During	66	Home Aer	24		BMD (DXA)	Aer fitness (12MWT); 1RM (overhead press, seated row, leg ext)
			Home Res				
Vanwaart, 2015 ⁷⁹	During	230	Sup + Home Aer + Res	CT	26 post-CT	Aer fitness (PPO, endurance, cycle), Grip strength, chair stand, Strength (HHD, elbow flex, knee ext), Fatigue (MFI, FQL)	CT completion
			Home Aer				
Yuen, 2007 ⁸⁰	After	22	Home Aer	12		Fatigue (PFS)	Aer fitness (6MWT)
			Home Res				

Legend: 1MW: 1-mile walk; 2kmWT: 2km walk time; 2minWT: 2 minute walk test; 6, 12MWT: 6, 12-minute walk test; AE: Adverse event; Aer: Aerobic; Aqua: Aquatic exercise; BC: Body composition; BF: Body fat; BIA: Bioelectrical impedance; BMC: Bone mineral composition; BMD: Bone mineral density; BMI: Body mass index; BP: Blood pressure; BPI: Brief Pain Inventory; BW: Body weight; Cont: Continuous; CT: Chemotherapy; DASH: Disabilities of the Arm, Shoulder and Hand questionnaire; DOP: deoxyprodinoline; DXA: Dual-energy X-ray absorptiometry; Dyn: dynamometer; EORTC-QLQ: European organization for research and treatment of cancer - quality of life questionnaire; Ex: exercise; FACT-B, G: Functional assessment of cancer therapy-breast, general; FAQ: Fatigue assessment questionnaire; FM: Fat mass; FQL: Fatigue quality list; FSI: Fatigue symptom index; FtF: Face-to-face; FVC: Forced vital capacity; Hb: Hemoglobin; HC: Hip circumference; HDL: High density lipoprotein; HHD: Hand-held dynamometer; HOMA-IR: Homeostatic model assessment-insulin resistance; HR: Heart rate; hs-CRP: high sensitivity C-reactive protein; IGF: Insulin-like growth factor; IGFBP: Insulin-like growth factor binding protein; IL: Interleukin; Int: Intervals; isoK: Isokinetic; IsoM: Isometric; LBM: Lean body mass; LDL: Low density lipoprotein; mCAFT: modified Canadian aerobic fitness test; MFI: Multidimensional fatigue inventory; MPO: Myeloperoxidase; MVC: Maximum voluntary contraction; Mve: Mve fitness chair; NR: Not reported; PA: Physical activity; PFS: Piper fatigue scale; PO: Power output; PPB: Physical performance battery; PPO: Peak power output; QoL: Quality of life; RBP: Resting blood pressure; Res: Resistance; RHR: Resting heart rate; RM: Repetition max; RPE: Rating of perceived exertion; SHBG: Sex hormone binding globulin; SR: Self-report; SSF: Sum of skinfolds; SSWT: Single stage walk test; Sup: Supervised; TBTW: Timed backward tandem walk; TC: Total cholesterol; Tel: Telephone; TG: Triglycerides; TM: Treadmill; TNF-a: Tumor necrosis factor-alpha; Trad: Traditional; TUG: Timed up and go; Tx: Treatment; unSup: Unsupervised; WC: Waist circumference; WHR: Waist-hip ratio; WOMAC: Western Ontario & McMaster Universities Osteoarthritis Index

Underline indicate previously included study

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