

Supplementary Data to “The effects of physical activity interventions on physical activity and health outcomes in young people during treatment for cancer: a systematic review and meta-analysis of randomised controlled trials”

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Table S1. Characteristics of included trials

Study Location Design	Participants Number (N) N, female: male Age range Average Age	Cancer type Treatment	Intervention Components	Comparator	Duration Follow Up	Measurement of PA, fatigue QOL, and SB	Statistical Model Adjustment
Cox, 2018 ⁽²⁹⁾ USA RCT	N=107, 37:70 4-18.99yrs 10.5yrs	ALL ALL therapy (unspecified)	MC 1) visits from nurse to encourage independent exercise; 2) routine physical therapy exercises. 5 x weekly, 30min. PT visited patients with decreasing frequency.	UC/ACG Received PT and nurse visits at the same intervals. Stretching exercises 5 x weekly, 30s.	D: 2.5yrs F: 8, 15, 135wks	PA • Accelerometer (SenseWear Pro III) QOL • The Child Health Questionnaire	Data reported with no adjustment.
Erickson, 2021 ⁽²⁸⁾ USA RCT	N=47, 37:10 18-39yrs 32.4yrs	Any Chemotherapy	MC 1) education on benefits of PA; 2) PA tracker to set and measure walking goals; 3) PA coaching. Delivered by SF at 4 scheduled clinic visits.	UC/ACG Met with SF at 4 scheduled clinic visits. No PA coaching.	D: 12wks F: 12wks	PA • Accelerometer (Actigraph Wgt3x-bt) Fatigue • PROMIS-Fatigue 8a Short Form	Data reported with no adjustment
Fiuza-Luces, 2017 ⁽³⁴⁾ Spain RCT	N=49, 14:35 4-18yrs 10.5yrs	Extracranial Neoadjuvant chemotherapy	SC Supervised in hospital training. Aerobic and strength exercises. 3 x weekly, 60-70min. Information on benefits of following a healthy lifestyle.	UC Same information on benefits of following a healthy lifestyle.	D: chemotherapy treatment period, mean 20wks (8-49) F: treatment termination, 2 months after end of treatment	PA • Accelerometer (GT3X model) QOL • PedsQL	Unclear if data reported with adjustment or not.
Hamari, 2019 ⁽²⁷⁾ Finland RCT	N=36, 10:26 3-16yrs 7.8yrs	ALL, or other cancer outside the CNS Includes vincristine	SC ≥30min of AVG daily during hospitalisation and at home. Guidance and instructions given by physiotherapist who also called participants at 4 weeks.	UC General advice for PA for 30 minutes a day	D: 8wks F: 2, 6, 12, 30 months	PA • Accelerometer (Fitbit) • Activity Diary • The Met Questionnaire • Activity Questionnaire QOL • PedsQL	Data reported with no adjustment

Lam, 2018 ⁽³³⁾ China RCT	N=70, 35:35 9-18yrs 12.7yrs	Any Unspecified	SC Training programme delivered by nurses beginning one week after discharge from hospitals. 28 visits total, 1hr. Wks 1-4, 2 x weekly; weeks 5-24, 1 x weekly. 15min health education talk delivered by research nurse.	ACG 15 minute health education talk & placebo intervention consisting of activities such as cards of chess, on the same schedule as experimental group	D: 6months F: 6, 9 months	PA • CUHK-PHARCY Fatigue • Fatigue Scale QOL • PedsQL	Data reported with no adjustment
Moyer-Mileur, 2009 ⁽³²⁾ USA RCT	N=13, 6:7 4-10yrs 6.6yrs	ALL Maintenance therapy – unspecified	MC Home-based nutrition and exercise intervention delivered by registered dietician. Ex programme based on physical activity pyramid youth. Initially prescribed ≥ 3 x 15-20min sessions of MVPA.	Received standard recommendations to eat a well-balanced diet, take a multivitamin with low or no folic acid, and to perform activity as tolerated	D: 12 months F: 6, 12 months	PA • ACTIVITY-GRAM questionnaire • Pedometer (DIGI Walker SW-701)	Data reported with no adjustment
Stössel, 2020 ⁽²⁶⁾ Germany RCT	N=33, 13:20 4-18yrs 11yrs	Any Chemotherapy and/or radiotherapy	SC Exercise program supervised by exercise scientist. 3 x weekly, 45-60min. Completed in hospital clinics or patient's home. Moderate-intensity endurance, strength, active games and balance and stretching exercises. Single patient or patient group.	UC	D: 6- to 8-weeks F: intervention completion (6-8wks)	PA • German MoMo questionnaire • PA scale Fatigue - PedsQL QOL - German language KINDL questionnaire	Adjusted for the baseline values for each outcome and stratification criteria (age, sex, tumour entity, and Lansky score at diagnosis).

PA, physical activity; QOL, Quality of life; SB, sedentary behaviour; USA, United States of America; RCT, randomised controlled trial; N, number; Yrs, ALL, Acute Lymphoblastic Leukaemia; MC, Multi-component; SC, Single-component; UC, Usual care; ACG, attention-control group; D, duration; F, follow-up; Min, minutes; S, seconds; PT, physical therapist; SF, study facilitator; PedsQL, The Paediatric Quality of Life Inventory; CNS, Central nervous system; AVG, active video games; Hr, hour, CUHK-PHARCY, Chinese University of Hong Kong Physical Activity Rating for Children and Youth; Ex, exercise

Table S2. PICO inclusion and exclusion criteria

	Inclusion	Exclusion
Population	<ul style="list-style-type: none"> • Children, Adolescents and Young Adults (0-39 years) • Receiving any cancer treatment 	<ul style="list-style-type: none"> • Adults and elderly people (40 years and over) • Cancer survivors (those who have completed treatment) • Children, adolescents, and young adults not receiving treatment • Any other population
Intervention	<ul style="list-style-type: none"> • Any intervention designed to increase physical activity and includes an aerobic component • Any setting 	<ul style="list-style-type: none"> • Not designed to promote aerobic activity • Interventions solely including mindfulness exercise or body conditioning (e.g. yoga or tai-chi) with no aerobic component
Comparator	<ul style="list-style-type: none"> • No treatment (standard care or wait list control) • Attention control • Placebo control 	<ul style="list-style-type: none"> • No comparator group
Outcomes	<ul style="list-style-type: none"> • Physical activity (objective and subjective measures) in any unit of measurement 	<ul style="list-style-type: none"> • Does not measure physical activity
Study design	<ul style="list-style-type: none"> • Randomised controlled trials • Quasi-randomised controlled trials 	<ul style="list-style-type: none"> • Studies of non-randomised controlled design
Other	<ul style="list-style-type: none"> • Conference abstracts 	<ul style="list-style-type: none"> • Study protocols • Systematic reviews

Table S3. Medline search terms

1. exp neoplasm/ OR exp oncology/
 2. (cancer* OR tumor* OR oncolog* OR leukemia* OR carcinoma* OR adeno-carcinoma* OR adenocarcinoma OR neoplas* OR lymphoma* OR malignan* OR melanoma* OR metastas* OR sarcoma* OR adenoma* OR blastoma* OR mesothelioma* OR neuroblast* OR glioblast*).ti,ab.
 3. 1 OR 2
 4. Exp exercise/ OR “physical activity”/ OR fitness/
 5. Exercise* OR aerobic*.ti,ab.
 6. 3 OR 4
 7. Exp adolescent/ OR exp “young adult”/ OR exp juvenile/ OR exp child/ or exp teenager/ OR exp teenager/ OR exp paediatric/
 8. (Adolescent* OR “Young Adult*” OR Adolesc* OR youth* OR teen* OR AYA OR YA or minor* OR “young N2 person*” OR “young N2 people”).ti,ab.
 9. 7 OR 8
 10. Exp “randomized controlled trial”/ OR exp “controlled clinical trial”/ OR exp randomization/ OR exp “intermethod comparison”/
 11. (“randomly N2 assigned” or randomized or RCT or quasi N2 RCT or quasi N3 randomized controlled trial OR random\$ OR placebo OR crossover OR “cross over” OR assigned OR allocated OR “controlled N7 study” OR “controlled N7 design” OR “controlled N7 trial”).ti,ab.
 12. 10 OR 11
 13. 3 AND 6 AND 9 AND 10
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Figure S1: Risk of bias assessments

	<u>D1</u>	<u>D2</u>	<u>D3</u>	<u>D4</u>	<u>D5</u>	<u>Overall</u>	
Cox, 2018 ⁽²⁹⁾							Low risk
Erickson, 2021 ⁽²⁸⁾							Some concerns
Fiuza-Luces, 2017 ⁽³⁴⁾							High risk
Hamari, 2019 ⁽²⁷⁾							
Lam, 2018 ⁽³³⁾							
Moyer-Mileur, 2009 ⁽³²⁾							
Stossel, 2020 ⁽²⁶⁾							

D1 Randomisation process

D2 Deviations from the intended interventions

D3 Missing outcome data

D4 Measurement of the outcome

D5 Selection of the reported results