

Table 3 Description of exercise training sessions in individuals with cancer (ALL)

Study population	Exercise intervention	Length of training session/Duration	Type of activity and volume	Main outcomes of the benefits of exercise intervention/References
ALL: intervention group (n=13); control group (n=15), 4-15 y	intervention group: five physical therapy sessions; control group: no instruction related to exercise intervention	20-60 minutes/16 weeks	mobility exercises: 30 sec 5 days per week (esp. dorsiflexion); lower extremity resistance exercises: 3 sets 10 reps 3 days per week; aerobic fitness exercises (e.g. walking, running): daily	significantly improved ankle dorsiflexion, active range of motion and knee extension strength (Cochia Marchese et al. 2003)
ALL: intervention group (n=6); control group (n=7), 4-10 y	intervention group: three training sessions per week; control group: standard diet recommendation, perform activities as tolerated	15-20 minutes/12 month	exercise of moderate-to-vigorous activity and nutritional education	greater improvement in physical activity and cardiovascular fitness between 6 and 12 months than control group (Moyser-Mileur et al. 2009)
ALL: n=9, 2-14 y	five training sessions per week	10-30 minutes/6-7 months	stretching exercise (ankle dorsiflexion); resistance exercise (lower- and upper-extremity exercise: 10 repetitions); aerobic exercise (walking, bike riding, and dancing)	the GNFvM and QOL improved steadily throughout the study and the parents reported being satisfied with the physical therapy program (Gohar et al. 2011)
ALL: intervention group (n=15); control group (n=15), 8-16 y	intervention group: 3 sessions per week (aerobic exercise program) and 3 session per week (home program); control group: instructed to maintain their usual level of activity as well as to perform home-based exercises	20-40 minutes/16 weeks	aerobic exercise program: stretching exercise, warm up period, followed by moderate intensity of aerobic exercises, and finishing with a cool down period; home program: program was based on the 'Royal Canadian Air Force Exercise Plans for Physical Fitness' (five basic exercises to enhance strength, flexibility and aerobic fitness)	improving physical fitness and fatigue levels in children with ALL (Baty and Elhakk 2017)
ALL: intervention group (n=16); control group (n=15), 7-19 y	intervention group: two training sessions per week	25-45 minutes/from May 2018 to September 2021	endurance and resistance training (the number of repetitions and series for each exercise: of 10-15 repetitions and 2-3 series)	significant differences in gut microbiota composition; bacterial alpha diversity correlated with the exercise training characteristics (Ugrayová et al. 2022)
ALL: intervention group (n=21); control group (n=16), 6-12 y	intervention group: two training sessions per week	25-45 minutes/8 weeks	endurance and resistance training (the number of repetitions and series for each exercise: of 10-15 repetitions and 2-3 series); probiotic supplementation	the exercise program combined with dairy probiotics increased bacterial richness and diversity (Bielek et al. 2023)
ALL: n=58 (four boys, three girls), 10-18 y	three training sessions per week	25-50 minutes/12 weeks	flexibility (1 set 10 repetitions), balance training (BOSU training (5 reps 10-30 s each), resistance training (2-4 sets of 12 repetitions 6 exercises) and dose-graded aerobic training 50%- 70% HRmax)	after training: significant increases in V _O 2peak, minute ventilation, upper- and lower-body muscular strength, 6-minute walk test improvement (Elmaggar et al. 2024)

ALL: acute lymphoblastic leukemia; HRmax: maximum heart rate; V_O2 peak: peak aerobic fitness; GNFvM: gross motor function measure; QOL: quality of life