

# Fitness4Survivors: A pilot study examining the impact of a 10 week CrossFit exercise program on the fitness and quality of life with teenage and young adult (TYA) cancer survivors. (Phase 1)

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## Introduction

As more young people survive cancer treatment there is a greater need for services to support this cohort of cancer survivors. One such survivor need is advice and guidance on exercise and fitness post treatment. Although generic advice on post treatment exercise exists, there remains a deficit in the prescription of post treatment exercise that can meet the specific needs of TYA cancer survivors.



76

14-24 year olds diagnosed each year in Northern Ireland.



287.1

Per million capita. The highest cancer incidence of any UK country.



80%

Five year survival rate.

A systematic narrative review was completed prior to this research study which identified, appraised and assessed 12 international studies based upon intervention (format and length), study design and effectiveness. The recommendations from this review helped inform the format of this study:

- Studies that used high intensity work outs and strength and conditioning exercises produced more significant increases in fitness measures.
- Studies that used a control group were better able to state a greater confidence in their results.
- A study of 10 or 12 weeks showed more significant difference in outcomes compared to longer or shorter studies.

## Design

- Quasi-experimental study design
- Non-randomised control trial
- Phase 1 - Experimental group receive exercise intervention
- Phase 2 - Control group receive exercise intervention
- Data analysis - Independent t-tests (IBM SPSS Statistical Software Package)

Participants were required to obtain 'medical approval to participate' from their primary care doctor in order to be selected for the study. Informed consent and parental consent (for under 18 year olds) was required prior to commencing the study.

## Recruitment and Sampling

Inclusion criteria:

- Diagnosed with an oncological or haematological cancer when aged between 16-24 years of age.
- Received or in receipt of a CLIC Sargent social work service.
- Currently aged 16-30 years of age.
- Not on active or maintenance treatment.
- Not palliative.
- Currently residing in Northern Ireland.

Exclusion criteria were:

- Currently on active cancer treatment.
- Currently on maintenance treatment.
- Within 6 months of a bone marrow transplant.
- Within 6 months of a stem cell transplant.
- Receiving palliative care.



Number of participants limited to 10 per group as part of ethical approval.

## Methodology

- 10-week exercise program (2 weeks of teaching movements prior)
- Group CrossFit classes held in purpose built gym (box) twice a week.
- Classes delivered by CrossFit L1 Trainer.

CrossFit is constantly varied functional movements performed at high intensity. All CrossFit workouts reflect the best aspects of gymnastics, weightlifting, running, rowing and more.

## Outcome Measures

Physical Fitness:

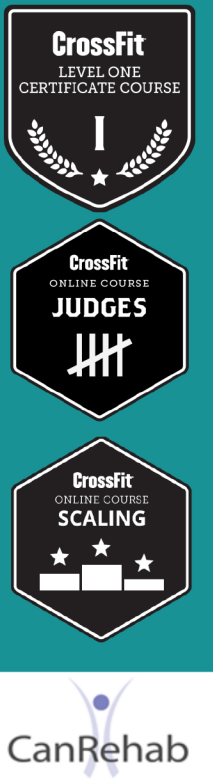
- Strength - hand grip dynamometer.
- Speed - 200 meter sprint.
- Endurance - 1 kilometre run.
- Balance - 30 second single leg stand.
- Lung Function – Spirometer.
- Cardiovascular health - Harvard step test.
- Flexibility - sit and reach test and two arm goniometer.

Quality of Life:

- EORTC Quality of Life Questionnaire-Core 36 (EORTC QLQ-C36).

Fatigue:

- The Functional Assessment of Chronic Illness Therapy (FACIT) fatigue Scale (Version 4).



## Phase 1 Findings

	Before	After
Press Ups-	5	18
Pull ups-	4	22
Heart health-	Average	Above average
Lung Age-	52	28
Back flex-	-8cm	6cm
200m sprint-	1m 23sec	38.98sec
1km run-	9m 14sec	5min 57sec
Handgrip strength-	46kg	63.5kg



	Before	After
Press Ups-	20	35
Pull ups-	8	10
Heart health-	Average	Excellent
Lung Age-	72	57
Back flex-	17cm	32cm
200m sprint-	38.48sec	25.89sec
1km run-	6m 43sec	4min 09sec
Handgrip strength-	79.7kg	88.3kg



	Before	After
Press Ups-	10	20
Pull ups-	5	10
Heart health-	Above average	Excellent
Lung Age-	31	19
Back flex-	6cm	16cm
200m sprint-	45.43sec	32.48sec
1km run-	6m 44sec	5min 16sec
Handgrip strength-	41.85kg	46.6kg



	Before	After
Press Ups-	25	35
Pull ups-	12	20
Heart health-	Average	Above average
Lung Age-	25	23
Back flex-	19cm	23cm
200m sprint-	31.71sec	26.56sec
1km run-	5m 32sec	4min 20sec
Handgrip strength-	46.95kg	52.6kg



## Quality of Life

Domains	Experimental Group	Control Group
Physical Functioning (revised)	Improvement	Reduction
Role Functioning (revised)	Improvement	Reduction
Emotional Functioning	Improvement	Reduction
Cognitive Functioning	Improvement	Reduction
Social Functioning	Improvement	No Change
Fatigue	Reduction	Increase
Nausea and Vomiting	No Change	Increase
Pain	Increase	Reduction
Dyspnoea	Reduction	Increase
Insomnia	Reduction	Increase
Appetite Loss	Reduction	No Change
Constipation	No Change	No Change
Diarrhoea	No Change	No Change
Financial Difficulties	Reduction	No Change

## Fatigue

The experimental group's fatigue measured at 28.6 during baselining and following the 10-week intervention they demonstrated an increase to 40.8.

## Conclusion and Recommendations

- A group based high intensity exercise program such as CrossFit is a suitable method of exercise for teenage and young adult cancer survivors.
- More age appropriate exercise schemes are required to encourage more young people to participate in exercise.
- Survivorship is every professionals responsibility.
- More collaborative working between health providers and charities to recruit and deliver exercise schemes.
- Increase the opportunities for young people to be involved in research.

"I feel less isolated in a way, knowing there's others the same age going through the same struggles".

"I thought I would never get back on track, now I am planning on going to Uni and in a strange way, exercising helped me study more because I had more energy".

"I thought I was alone in struggling with life after cancer, but then I met these guys and realise I am not doing too badly".

"Playing with my son is much easier, sometimes I forget how strong I am when I go to lift him"

"this week I wasn't tired during work"

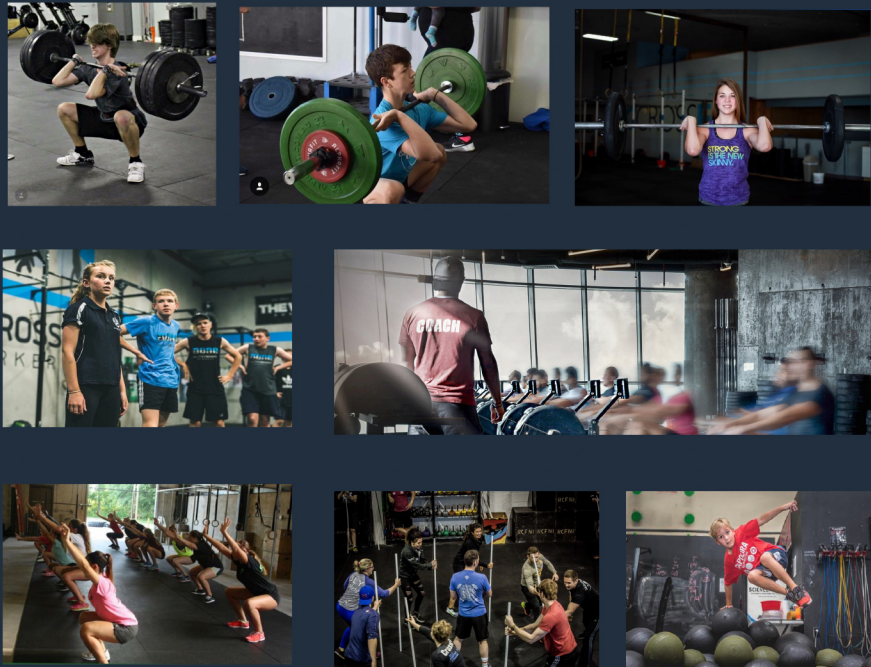
"I was pretty depressed before this, but now I am looking forward to life a bit more and plan to start a new fitness course"

"you use all your energy up getting through treatment and then everyone thinks life goes back to normal but it doesn't, doing this proves that I need more control if I want to get my life back"

## The Role of Social Media

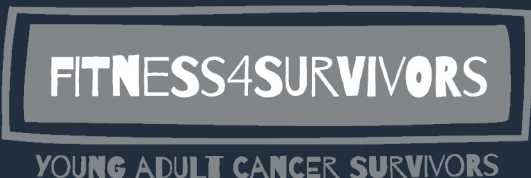


Workouts posted after each class on Instagram #fitness4survivors



Want to learn more?

Email: [Simon.darby@clicsargent.org.uk](mailto:Simon.darby@clicsargent.org.uk)  
Visit 'Fitness4Survivors' on Instagram



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Special acknowledgement to:

