

Supplementary figure 1: List of items of advice offered by TCOCT protocol (11).

Breakfast	Lunch	Afternoon	Dinner	Activity	General
<i>Eat breakfast</i>	<i>Bring and eat lunch</i>	<i>Eat in the afternoon</i>	<i>Eat dinner</i>	<i>Seek to increase physical activity to one hour daily</i>	<i>1–2 pieces of fruit per day</i>
<i>Reduce eating at TV/PC</i>	<i>Reduce eating at TV/PC</i>	<i>Reduce eating at TV/PC</i>	<i>Reduce eating at TV/PC</i>	<i>Decrease TV/PC to 2 hours</i>	<i>Reduce fast food</i>
<i>Reduce toast/white bread</i>	<i>Reduce toast/white bread</i>	<i>Reduce toast/white bread</i>	<i>Reduce toast/white bread</i>	<i>Decrease TV/PC to 3 hours</i>	<i>Fast food once per month</i>
<i>Reduce fatty/sweet yoghurt</i>	<i>Reduce food high in fat and sugar</i>	<i>Reduce food high in fat and sugar</i>	<i>Reduce food high in fat and sugar</i>	<i>Reduce TV/PC before 6 pm</i>	<i>Reduce candy</i>
<i>Instead dark bread or cereals high in fibers and low in fat and sugar</i>	<i>Instead eat dark bread high in fibers</i>	<i>Instead eat dark bread high in fibers</i>	<i>Instead, dinner should be low-fat, low in sugar and high in fibers</i>	<i>Bicycle to school</i>	<i>Candy once a week for \$1 (under age 11) or \$2 (over age 11)</i>
<i>Reduce chocolate in either drink or on bread</i>	<i>Reduce chocolate in either drink or on bread</i>	<i>Reduce chocolate in either drink or on bread</i>	<i>Reduce chocolate in either drink or on bread</i>	<i>Dance to music at home</i>	<i>Reduce ice-cream</i>
<i>Reduce jam or honey</i>	<i>Reduce jam or honey</i>	<i>Reduce jam or honey</i>	<i>Portions arranged in the kitchen</i>	<i>Play</i>	<i>Ice cream once a week</i>
<i>Reduce high-fat cheese, max 13%</i>	<i>Reduce high-fat cheese, max 13%</i>	<i>Reduce high-fat cheese, max 13%</i>	<i>Normal size of Portions; 1/5 meat/fish, 2/5 potatoes, rice, or pasta, 2/5 salad and vegetables</i>	<i>Bicycle</i>	<i>Reduce cake</i>
<i>Instead low-fat fish, meat, and vegetables</i>	<i>Instead low-fat fish, meat, and vegetables</i>	<i>Instead low-fat fish, meat, and vegetables</i>	<i>Second portion after 20 minutes</i>	<i>Gymnastics</i>	<i>Cake once a week</i>
<i>Reduce butter</i>	<i>Reduce butter</i>	<i>Reduce butter</i>	<i>Gravy max 5%</i>	<i>Swim</i>	<i>Reduce snacking</i>
<i>Instead margarine (max 35% fat)</i>	<i>Instead margarine (max 35% fat)</i>	<i>Instead margarine (max 35% fat)</i>	<i>Instead margarine (max 35% fat)</i>	<i>Basketball</i>	<i>Snacking once a week</i>
<i>Reduce high-fat milk</i>	<i>Reduce high-fat milk</i>	<i>Reduce high-fat milk</i>	<i>Reduce high-fat milk</i>	<i>Handball</i>	<i>Reduce soda, juice, iced tea, or cocoa</i>
<i>Reduce soda, juice or iced tea</i>	<i>Reduce soda, juice or iced tea</i>	<i>Reduce soda, juice or iced tea</i>	<i>Reduce soda, juice or iced tea</i>	<i>Tennis</i>	<i>Soda, juice, iced tea, and cocoa once a week</i>
<i>Instead water or low-fat milk</i>	<i>Instead water or low-fat milk</i>	<i>Instead water or low-fat milk</i>	<i>Instead water or low-fat milk</i>	<i>Ice-hockey</i>	<i>Instead water or low-fat milk</i>
<i>Reduce candy or snacking</i>	<i>Reduce candy or snacking</i>	<i>Reduce candy or snacking</i>	<i>Reduce candy or snacking</i>	<i>Attend other organized discipline</i>	<i>Reduce smoking and alcohol</i>

Supplementary figure 2: Example of activities at a HIIT session.

Activity:	Activity description:	Music / equipment:	Progression / regression:
Warm up: dodge ball -with exercises / running - 10-15 minutes - Intensity (60-70 % HRmax)	- The one with the ball tries to hit the rest of the players without walking - When hit, the person performs 10 x repetition of an exercise by own choosing For example: Jumping Jacks, squats, push-ups, crunches, etc.	Music: Happy music Equipment: 2 foam balls	Progression: - Running laps instead of exercises - The coach decides the exercises and amount - 2 balls at a time Regression: - Less repetitions of the exercise
Catch the tail – tag: - 1 x 4 minutes - Intensity (> 85 % HRmax)	- Every participant gets two “tails” each. - Set a timer for 4 min. The participants have to get as many tails as possible. - With or without a tail of your own – you are still in the game and can catch tails - After 4 min. each participant counts their tails	Music: Music with a higher BPM to facilitate running. Preferable music the participants knows. Equipment: - 2 x cloth or rag per player	Progression: - Increase the time playing Regression: - Decrease the time playing
Break: 3 minutes rest / active recovery (walking around the gym, moving equipment) / socializing			
Soccer: - Tip over objects - 1 x 4 minutes - Intensity (> 85 % HRmax)	- The players are divided in two teams - Each team places 3 objects in their lane end - To reach a goal each team must tip over the opponent team’s objects - There is no permanent goalkeeper	Music: Music with high BPM to facilitate higher intensity movement. Equipment: - 6 objects - 1 Soccer ball	Progression: - All team members must touch the ball before reaching for a goal - Constant movement, with and without the ball Regression: - Reduce the number of objects
Break: 3 minutes rest / active recovery (walking around the gym, moving equipment) / socializing			
Soccer: - Tip over objects - 1 x 4 minutes - Intensity (> 85 % HRmax)	- The players are divided in two teams - Each team places 3 objects in their lane end - To reach a goal each team must tip over the opponent team’s objects - There is no permanent goalkeeper	Music: Music with high BPM to facilitate higher intensity movement. Equipment: - 6 objects - 1 Soccer ball	Progression: - All team members must touch the ball before reaching for a goal - Constant movement, with and without the ball Regression: - Reduce the number of objects
Break: 3 minutes rest / active recovery (walking around the gym, moving equipment) / socializing			
Circuit training - 1 x 4 minutes - Intensity (> 85 % HRmax)	- Pick 4-6 exercises (strength-based) - Examples: Jumping Jacks, squats, push-ups, crunches, back extensions etc. - Set a timer 40 sec. of work-out and 20 sec. break + switch	Music: Mood music with higher BPM Equipment: - Stopwatch - Optional: skipping robes, weights, resistance bands etc.	Progression: - Longer training sessions before breaktime - Focus on high intensity exercises Regression: - Shorter training sessions before breaktime
Cool-down: - 5-10 minutes - Intensity (40-50 % HRmax)	Stretching Yoga	Music: Mood music	

Supplementary table 1:

Comparison between participants with ≥ 70 % participation in HIIT sessions compared < 70 % participation at 3 and 12 months visits. Adjusted for baseline values.

	Participants (N)	Mean difference 3 months (95 % CI)	P-value	Participants (N)	Mean difference 12 months (95 % CI)	P-value
BMI z-score	82	0.04 (-0.12; 0.19)	0.66	67	0.002 (-0.17; 0.18)	0.98
Waist (cm)	81	0.56 (-4.27; 5.40)	0.82	66	-2.25 (-7.72; 3.21)	0.42
Systolic blood pressure (mmHg)	79	-1.93 (-5.73; 1.87)	0.32	66	-1.07 (-5.30; 3.16)	0.62
Diastolic blood pressure (mmHg)	79	-0.13 (-2.81; 2.54)	0.92	66	-0.82 (-3.78; 2.13)	0.59
WHO-5 score	82	3.73 (-3.38; 10.83)	0.30	63	-0.64 (-8.84; 7.56)	0.88
PedsQL Child						
Total score	77	4.29 (0.32; 8.26)	0.03	61	-2.23 (-6.63; 2.18)	0.32
Psychosocial score	77	2.90 (-1.42; 7.22)	0.19	61	-1.80 (-6.54; 2.94)	0.46
Physical score	82	6.62 (1.70; 11.55)	< 0.01	64	-2.69 (-8.26; 2.87)	0.34

Abbreviations: SD: standard deviation, BMI: Body Mass Index, WHO-5: WHO-Five Well-Being Index, PedsQL: Pediatric Quality of Life Inventory, version 4.0 Generic Core Scales

Supplementary table 2:

Absolute values for each outcome measure at 3 and 12 months follow-up, divided by randomization group

Randomization	3 month follow-up		12 months follow-up	
	HIIT	TCOCT (control)	HIIT	TCOCT (control)
N (%)	90 (52.0)	83 (48.0)	90 (52.0)	83 (48.0)
Waist circumference, mean (SD)	92.4 (13.0)	88.1 (11.8)	92.5 (12.0)	88.5 (12.8)
BMI z-score, mean (SD)	2.5 (0.6)	2.2 (0.6)	2.4 (0.7)	2.1 (0.8)
Systolic blood pressure (mmHg)	107.9 (11.8)	106.0 (11.0)	108.6 (9.9)	108.3 (10.5)
Diastolic blood pressure (mmHg)	66.3 (6.0)	66.4 (6.1)	67.4 (7.2)	67.8 (6.6)
WHO-5 score	73.2 (16.2)	70.6 (17.0)	70.7 (18.0)	68.4 (18.7)
PedsQL Child				
Total score	85.4 (12.9)	84.3 (11.4)	82.5 (14.6)	89.0 (9.1)
Psychosocial score	76.0 (13.4)	73.6 (11.4)	75.2 (13.2)	74.6 (9.8)
Physical score	79.3 (12.4)	77.4 (10.5)	77.8 (12.7)	79.8 (8.4)
PedsQL Parents				
Total score	84.3 (14.3)	80.8 (14.5)	79.9 (15.4)	84.1 (12.4)
Psychosocial score	74.4 (14.8)	73.0 (11.7)	71.3 (14.4)	72.9 (12.4)
Physical score	77.8 (13.6)	75.9 (11.3)	74.3 (13.9)	76.8 (11.6)

Abbreviations: SD: standard deviation, BMI: Body Mass Index, WHO-5: WHO-Five Well-Being Index, PedsQL: Pediatric Quality of Life Inventory, version 4.0 Generic Core Scales