

The feasibility of a CrossFit Kids based exercise program for high-functioning children with Autism Spectrum Disorder

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Introduction

Studies have shown that students with autism (ASD) frequently cannot complete the activities during physical education (PE) class, which is a contributor to a negative experience in PE. Team-based cooperative programs such as organized sports are also not popular among the majority of children with ASD. The body weight-based CrossFit Kids program is geared to create a fun and exciting exercise program for children. The purpose of this study was to assess the feasibility (satisfaction and fidelity) of the CrossFit Kids based GRIFFit high-intensity exercise program during a 5-week summer camp for high-functioning children with ASD (HFASD).

Methods

The GRIFFit program was run concurrently with a clinically-proven five-week summer camp program (summerMAX™) for HFASD. The children (n= 35, \bar{x} :10.14 yrs.) attended one-hour GRIFFit sessions, four days per week. Satisfaction with the program was rated on a seven-point Likert scale with '1' being the lowest score and '7' being the highest score. Satisfaction with the overall program was collected for participants and clinicians at the end of the program. (Tables 1-3) Additionally, participants' satisfaction with both 'individually-completed' activities (IC) or 'cooperatively-completed' activities (CC) was collected at the beginning and end of the program. Fidelity (Figure 1) was monitored for 64.9% of sessions using three research assistants to ensure accuracy of program implementation. Descriptive analysis were calculated for all variables.

FIGURE 1 - FIDELITY CHECKLIST

Lesson:	Date:
Lead:	Observer:
<input type="checkbox"/> Y <input type="checkbox"/> N Starts on Time (Time Started)	<input type="checkbox"/> Y <input type="checkbox"/> N Ends on Time (Time Ended)
Pre-Instruction Period	
<input type="checkbox"/> Y <input type="checkbox"/> N Area is clear	<input type="checkbox"/> Y <input type="checkbox"/> N Cash/Queue Period
<input type="checkbox"/> Y <input type="checkbox"/> N Have all materials needed for activity	<input type="checkbox"/> Y <input type="checkbox"/> N Asked what was learned today
<input type="checkbox"/> Y <input type="checkbox"/> N Staff distributed equally about area of activity	<input type="checkbox"/> Y <input type="checkbox"/> N Asked what their favorite thing was today
<input type="checkbox"/> Y <input type="checkbox"/> N Write board into daily schedule with drawings	<input type="checkbox"/> Y <input type="checkbox"/> N Staff summarizes what was learned
Instruction Period	
<input type="checkbox"/> Y <input type="checkbox"/> N Review Program rules	<input type="checkbox"/> Y <input type="checkbox"/> N Running the Session
<input type="checkbox"/> Y <input type="checkbox"/> N Review GRIFFit activities for the day	<input type="checkbox"/> Y <input type="checkbox"/> N Staff actively engaged in activity
<input type="checkbox"/> Y <input type="checkbox"/> N Identifies the target skill(s) used today	<input type="checkbox"/> Y <input type="checkbox"/> N Children told to have fun and work hard
<input type="checkbox"/> Y <input type="checkbox"/> N Follows target skill steps	<input type="checkbox"/> Y <input type="checkbox"/> N Staff provided commands appropriately
<input type="checkbox"/> Y <input type="checkbox"/> N Adhered to period time frame	
Warm-Up Period	
<input type="checkbox"/> Y <input type="checkbox"/> N Included review of previously learned skill	
<input type="checkbox"/> Y <input type="checkbox"/> N Encouraged children	
<input type="checkbox"/> Y <input type="checkbox"/> N Adhered to period time frame	
<input type="checkbox"/> Y <input type="checkbox"/> N Children allowed an opportunity to hydrate	
WOD Period	
<input type="checkbox"/> Y <input type="checkbox"/> N Skill session introduces/practices movements	
<input type="checkbox"/> Y <input type="checkbox"/> N Group practices skill together	
<input type="checkbox"/> Y <input type="checkbox"/> N Taught skill as class and not singled out	
<input type="checkbox"/> Y <input type="checkbox"/> N Measurements are practiced unobscured	
<input type="checkbox"/> Y <input type="checkbox"/> N Told what to do other than what not to do	
<input type="checkbox"/> Y <input type="checkbox"/> N WOD timer is set appropriately & mentioned	
<input type="checkbox"/> Y <input type="checkbox"/> N Allowed to write score on whiteboard	
<input type="checkbox"/> Y <input type="checkbox"/> N Encouraged children	
<input type="checkbox"/> Y <input type="checkbox"/> N Adhered to period time frame	
<input type="checkbox"/> Y <input type="checkbox"/> N Children allowed an opportunity to hydrate	
Game Period	
<input type="checkbox"/> Y <input type="checkbox"/> N Game demonstrated and rules explained	
<input type="checkbox"/> Y <input type="checkbox"/> N Game practiced one time before play	
<input type="checkbox"/> Y <input type="checkbox"/> N Encouraged children	
<input type="checkbox"/> Y <input type="checkbox"/> N Adhered to period time frame	
<input type="checkbox"/> Y <input type="checkbox"/> N Children allowed an opportunity to hydrate	
Totals	
<input type="checkbox"/> Y <input type="checkbox"/> N	
Percentage: _____ (Out of 37)	Date Reviewed: _____

TABLE 1 - CHILD OVERALL SATISFACTION

QUESTION	MEAN	SD
I am satisfied that the GRIFFit activities were fun.	6.66	1.08
I am satisfied that the GRIFFit counselors helped me to learn the activities.	6.17	1.76
I am satisfied that GRIFFit helped me to learn new skills that I did not know in the past.	6.29	1.58
I am satisfied that GRIFFit helped me to perform better at fitness activities.	6.31	1.45
I am satisfied that I learned more about fitness.	6.46	1.27
I am satisfied that I am more fit after being in GRIFFit.	6.60	1.24
Compared to other fitness and sport programs that I have participated in, GRIFFit is:	6.26	1.36
My overall feeling about GRIFFit is:	6.43	1.29

TABLE 2 - STAFF OVERALL SATISFACTION

QUESTION	MEAN	SD
I was adequately informed of the duties and responsibilities expected of me.	6.86	0.38
The pre-training readings helped me to better understand Autism Spectrum Disorder and exercise programming.	6.86	0.38
The GRIFFit manual provided me with critical and necessary information on how to implement the treatment protocol.	6.86	0.38
The training week activities prior to the program was beneficial for my ability to implement the program.	7.00	0.00
Supervisors effectively responded to questions and concerns in a timely fashion.	7.00	0.00
Supervisory feedback that I received during the program was helpful in improving my performance implementing the protocol.	6.86	0.38
I would recommend this experience to other students.	7.00	0.00
My overall feeling about GRIFFit is:	7.00	0.00

TABLE 3 - CHILD INDIVIDUAL VS. COOPERATIVE POST SATISFACTION

QUESTION	INDIVIDUAL SESSION [MEAN(SD)]	COOP SESSION [MEAN(SD)]
I am satisfied that today's GRIFFit activities were fun.	6.55 (1.50)	6.13 (2.00)
I am satisfied that the GRIFFit counselors helped me learn today's lesson.	6.06 (1.86)	5.72 (2.13)
I am satisfied that I learned new skills today that I did not know in the past.	5.55 (2.11)	4.94 (2.30)
I am satisfied that today's GRIFFit helped me to perform better at fitness activities.	6.35 (1.62)	5.75 (2.05)
I am satisfied that I learned more about fitness today.	6.19 (1.62)	5.69 (2.07)
I would like more activities like today's GRIFFit.	6.45 (1.52)	6.05 (1.83)
Compared to other fitness and sport programs that I have participated in, the activities today were the:	6.29 (1.57)	5.75 (1.80)
My overall feeling about today's activities is:	6.42 (1.52)	5.78 (2.03)

Results

The participant's overall program satisfaction was 6.40/7. (Table 1) Staff satisfaction with the program was 6.94/7. (Table 2) The participant's IC and CC pre-program satisfaction averaged 5.68 and 6.0/7 respectively. The participant's IC post-program satisfaction was calculated to be 6.23/7, while the CC post-program satisfaction was calculated to be 5.72/7 (Table 3), This possibly supports the theory that HFASD prefer to participate in activities on an individual basis rather than cooperative activities. The fidelity of program implementation averaged 93.7% over five weeks. The inter-rater reliability between the research assistants over the exercise sessions averaged 100%.

Discussion

This study demonstrated that a CrossFit Kids-based high-intensity exercise program for children with HFASD was feasible. Child participants and the program staff were equally satisfied with the program and the program was implemented with a high degree of accuracy. Qualitative responses from participants include "I liked the WOD. Teamwork was very important back then!" and "I liked today's activities because they were a lot of fun and it was not all work". These responses tell us that participants were satisfied with the program. The overall satisfaction of the participants and the staff were a positive result of the study and a subsequent program is planned for Summer 2017.

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