

# Improving participation through the PREP intervention: Current evidence and emerging benefits

CAPA 2022

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# What is PREP?

- Involves real-life learning!
- Focuses on modifying the environment
- Moves away from body-functions or impairment-level approaches
- Includes a coaching element
- Focuses on building a 'Participation Team'



# Pathways and Resources for Engagement and Participation

A Practice Model for Occupational Therapists

Mary Law, Dana Anaby, Rachel Teplicky and Laura Turner

## PREP's 5 steps

1) Make goals

2) Map out a plan

3) Make it happen

4) Measure the process and outcomes

5) Move forward

The PREP intervention protocol is now available on the CanChild website:

<https://www.canchild.ca/en/shop/25-prep>

# e-learning module on PREP



What is PREP?

Learn to Use PREP

PREP in Action

Resources

What is PREP?



<https://www.prepintervention.ca>



# Objective

This presentation summarizes existing evidence on the effectiveness of the PREP approach through a series of studies with over 150 distinct self-chosen participation goals.



# A series of studies examining PREP

## Youth

N=28

Aged 12 to 18

Physical disabilities

Community

## Young Adults

N=28

Aged 15 to 25

Physical disabilities

Community/COVID-19

## Students in Inclusive Schools

N=39

up to 15

Various disabilities

School

## Younger Children

N=3

Aged 6 to 7

Born preterm

Home/School/Community

# Our Design

- Interrupted Time Series design
- Individual-based
- Participants serve as their own control
- Involves multiple data points
- Trends during the intervention phase are compared to trends in baseline phase
- Change in participation levels is measured using the COPM

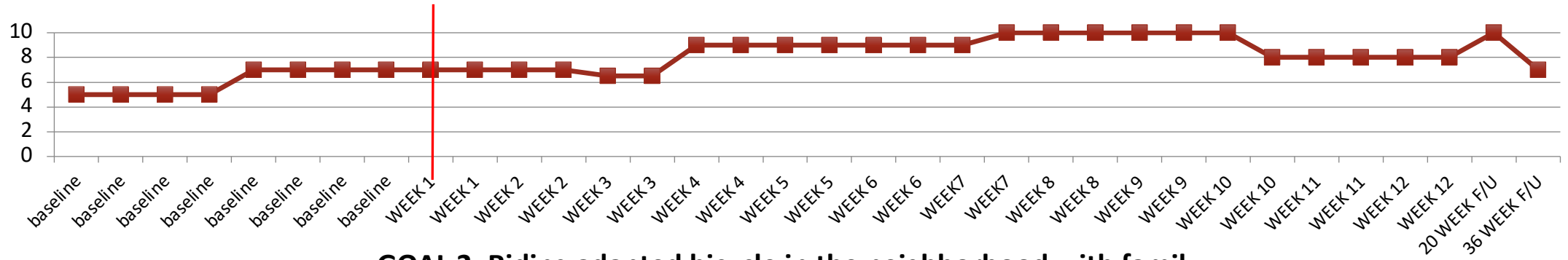
**PREP among youth**



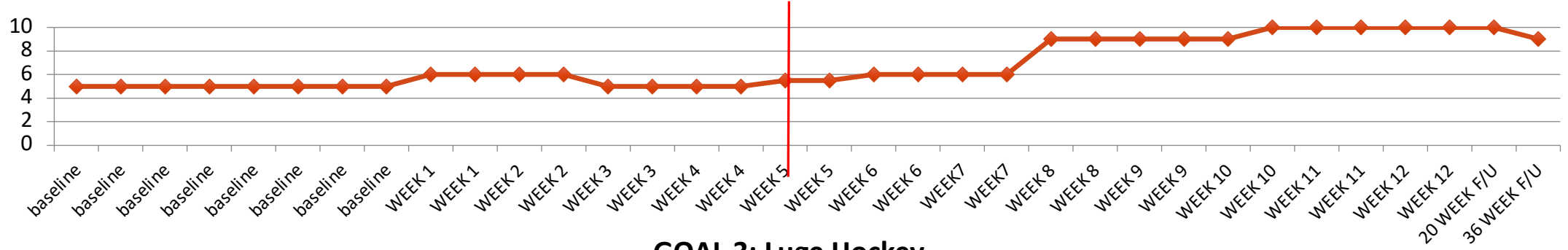
# Improving and maintaining levels of Participation

- 28 youth (14 females) ages 12 to 18 years (mean=14.6, SD=1.8)
- Youth had moderate physical disabilities (67.6 based on the ASK) and a range of functional issues (mean=6.7, SD=2.9)
- Each youth set 3 participation goals
- Goal performance was measured twice a week using the COPM (32 data points per goal)
- The performance of 79 goals were analyzed using Segmented Regression and HLM

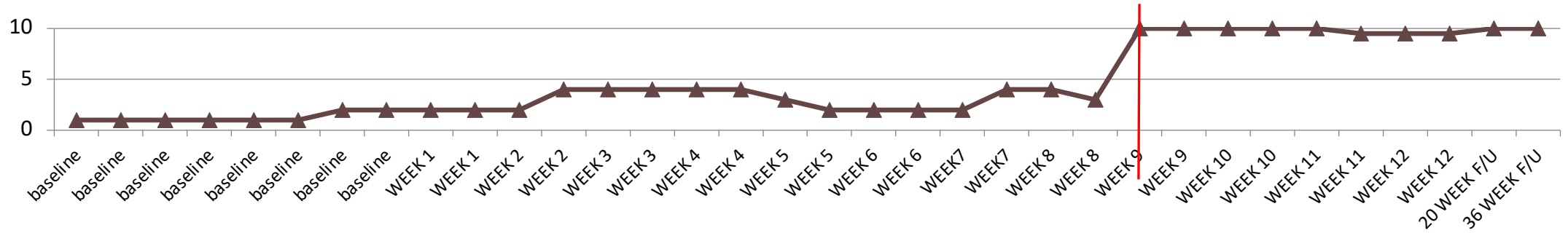
### GOAL 1: Going to the mall with friends



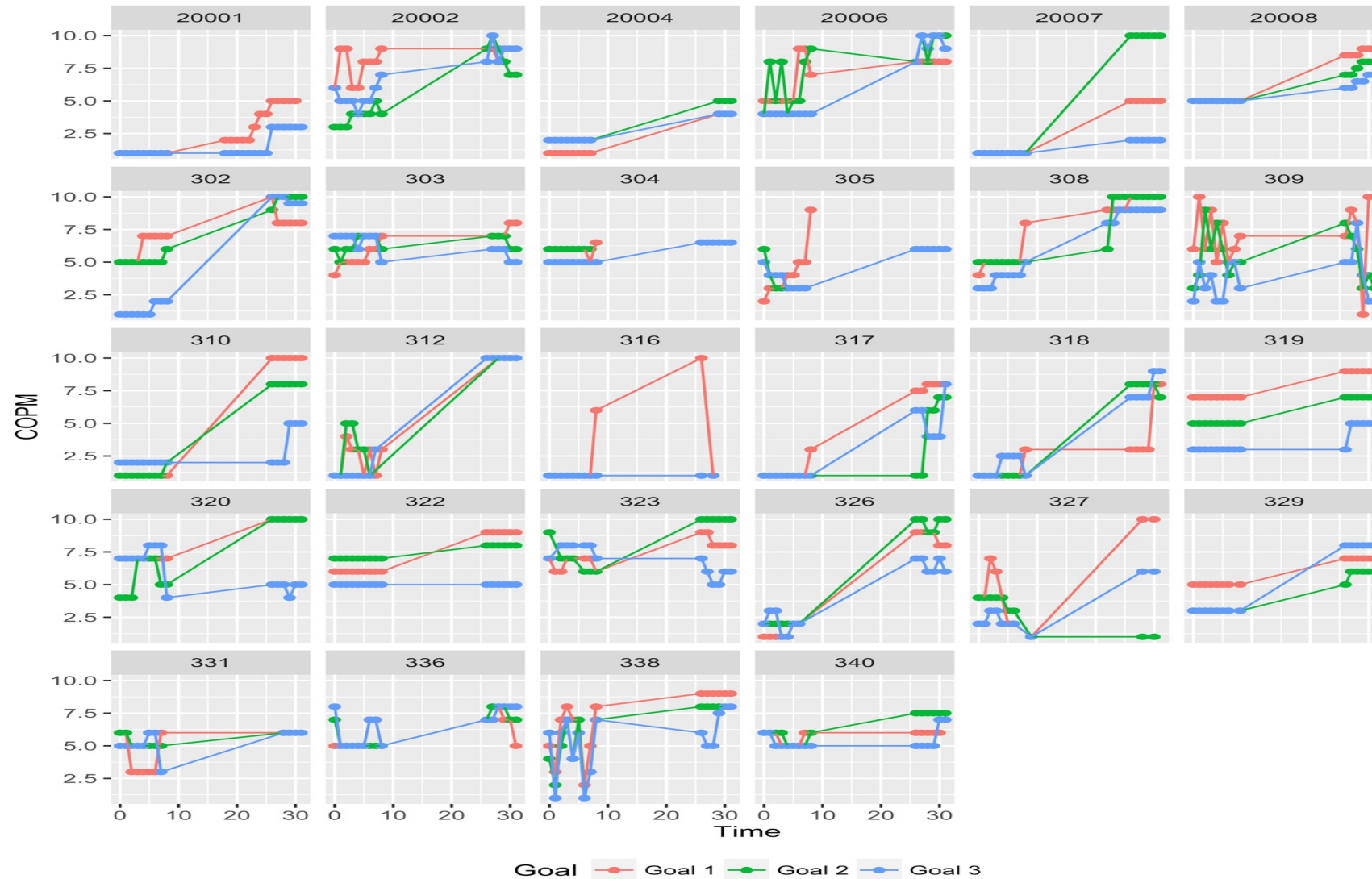
### GOAL 2: Riding adapted bicycle in the neighborhood with family



### GOAL 3: Luge Hockey



# PREP Results – across 79 goals



# PREP Results

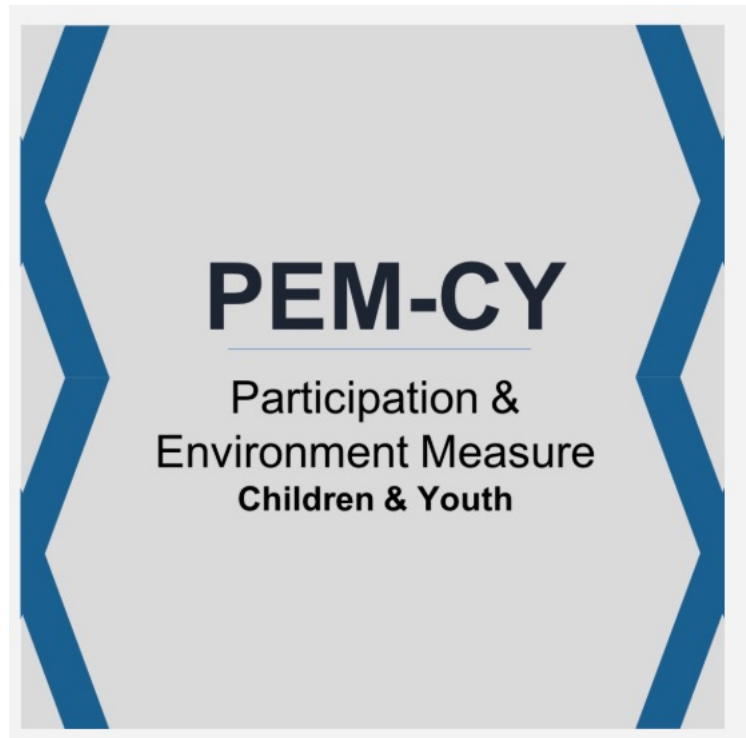
- A positive and statistically significant treatment effect ( $B=2.08$ ,  $p<0.0001$ ) was observed across 28 youth activities/goals ( $n=79$ )
- An average improvement of more than 2 points on the COPM performance scale was observed indicating a clinically significant change
- Improvements in COPM scores were maintained at 20-week follow-up

Anaby et al., 2018

# PREP has a ripple effect



# PREP has a ripple effect (n=20)



- Post-intervention, youth engaged:
- ✓ more often and in greater range of **community** activities
  - ✓ less often in **home** activities
  - ✓ more in special roles at **school**
  - ✓ more parents perceived environmental supports in the **community** (e.g., information, program and services)

**PREP during COVID-19**  
**(among young adults)**

# Chosen activities during COVID-19

## Sports

Badminton

Swimming

Horse riding

Football

Rock Climbing

## Music

Singing

Piano (x4)

Saxophone

## Recreation

Cooking

Board games

Painting

Drawing

Sewing

Photography

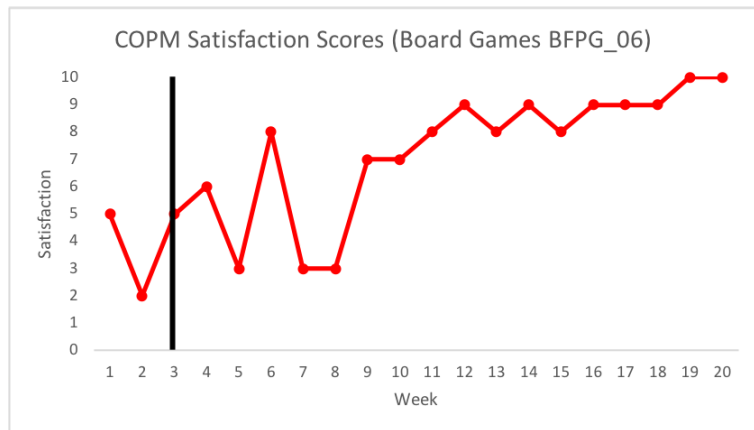
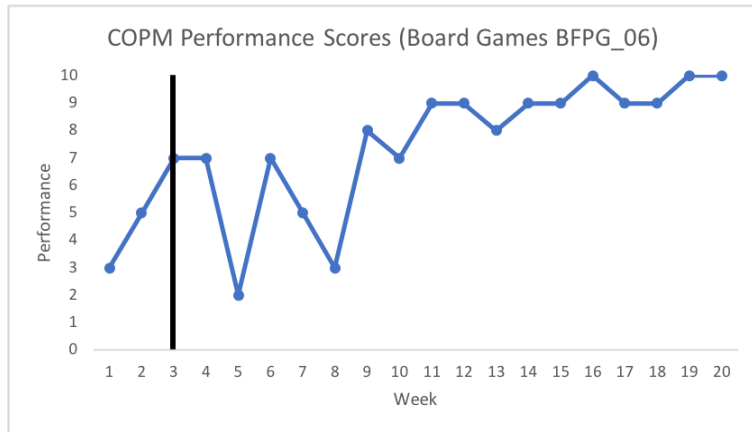
## Volunteering

Radio station

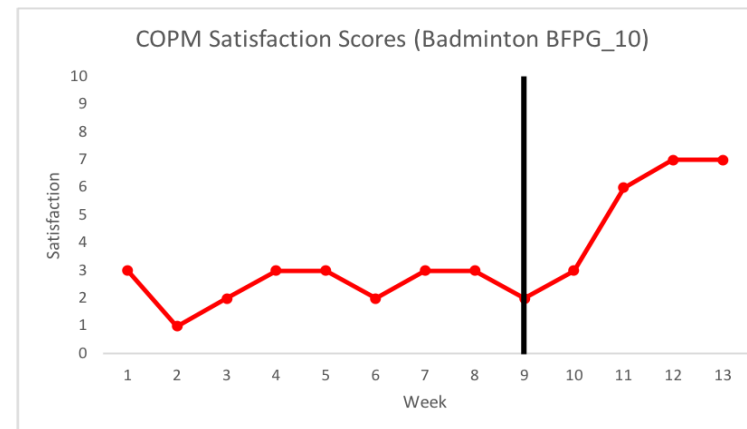
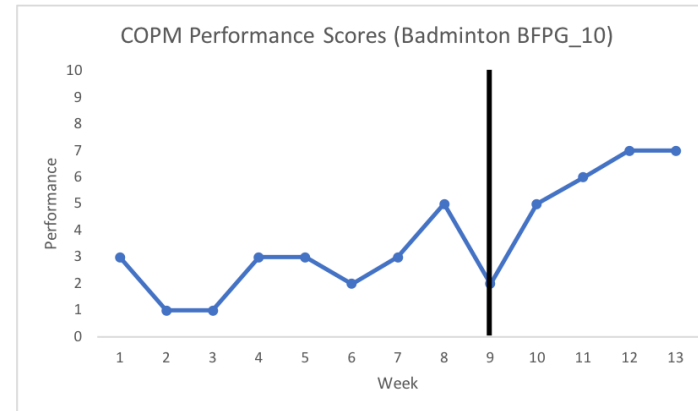


# Results (n=19)

## Board Games

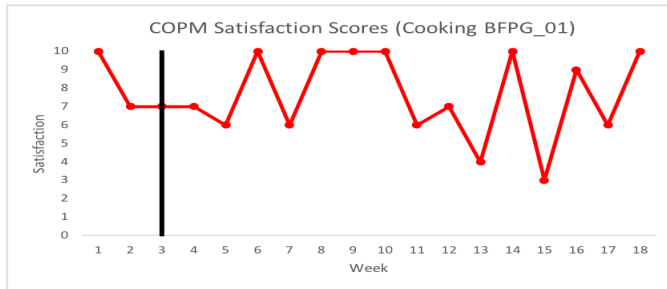
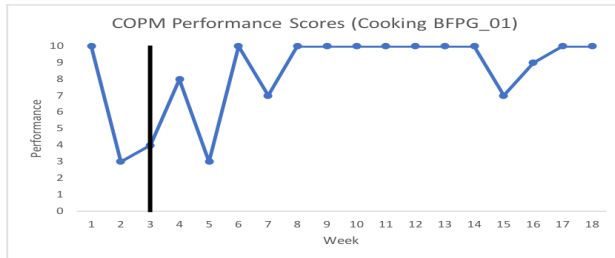


## Badminton

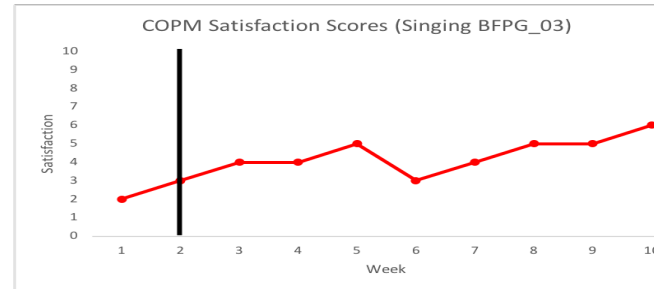
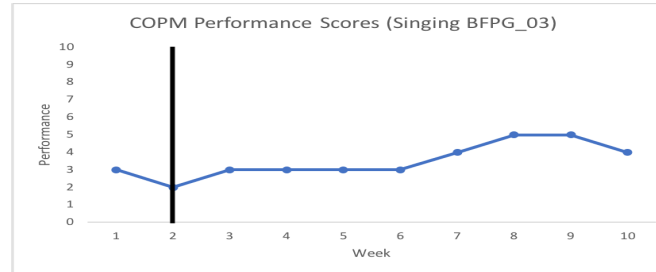


X 19

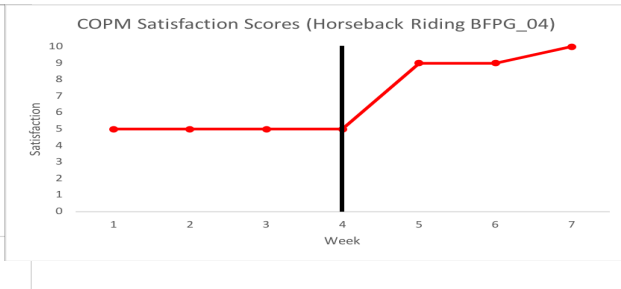
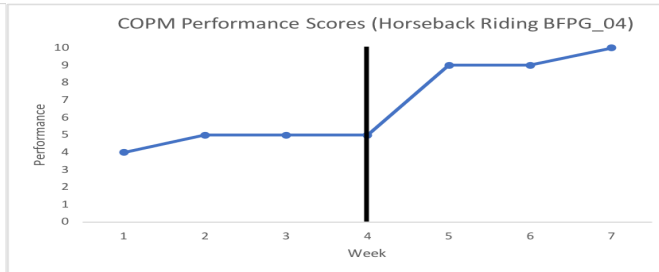
## Cooking



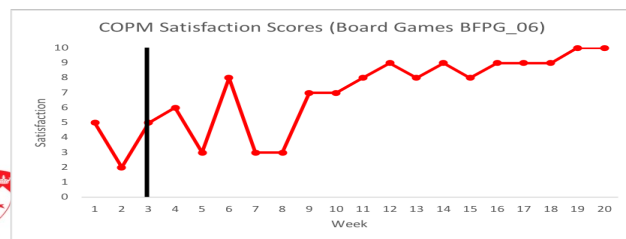
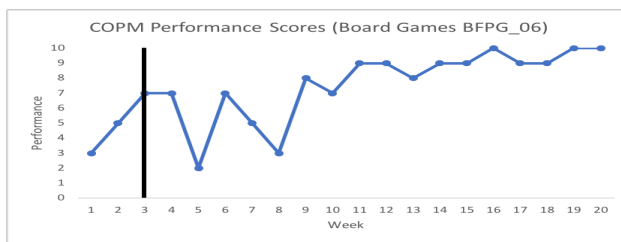
## Singing



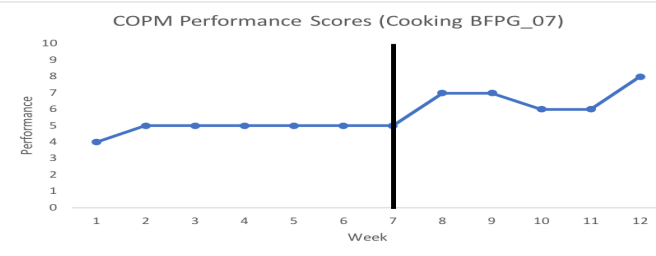
## Horseback riding



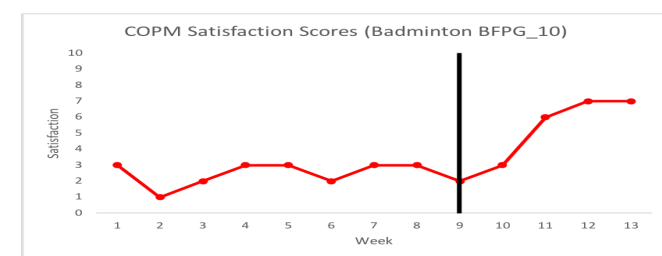
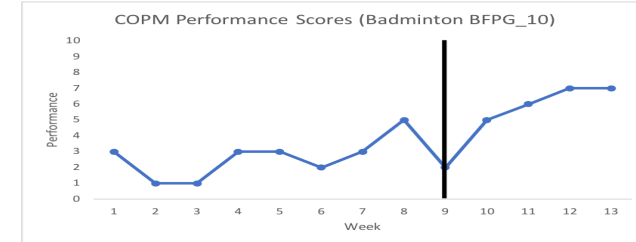
## Board Games



## Cooking



## Badminton



# Results (n=19)

A mixed-effects analysis of 38 individual trajectories indicated:

- ✓ Significant immediate post-intervention changes with large effect sizes:
  - ✓ in activity **performance** (ES=1.04)
  - ✓ In **satisfaction** with performance (ES= 1.41)
- ✓ Performance and satisfaction scores continued to improve significantly (on a weekly basis) throughout the intervention.

# PREP in Inclusive Schools

# Participation goals chosen by the children (n=39)

## Recess

Playing ball games with classmates in the playground

Rubber band jumping games with girlfriends

Recreational activities (comics, arts and craft) with a friend

## Home

Getting together with classmates after school

Enjoying cooking with family members

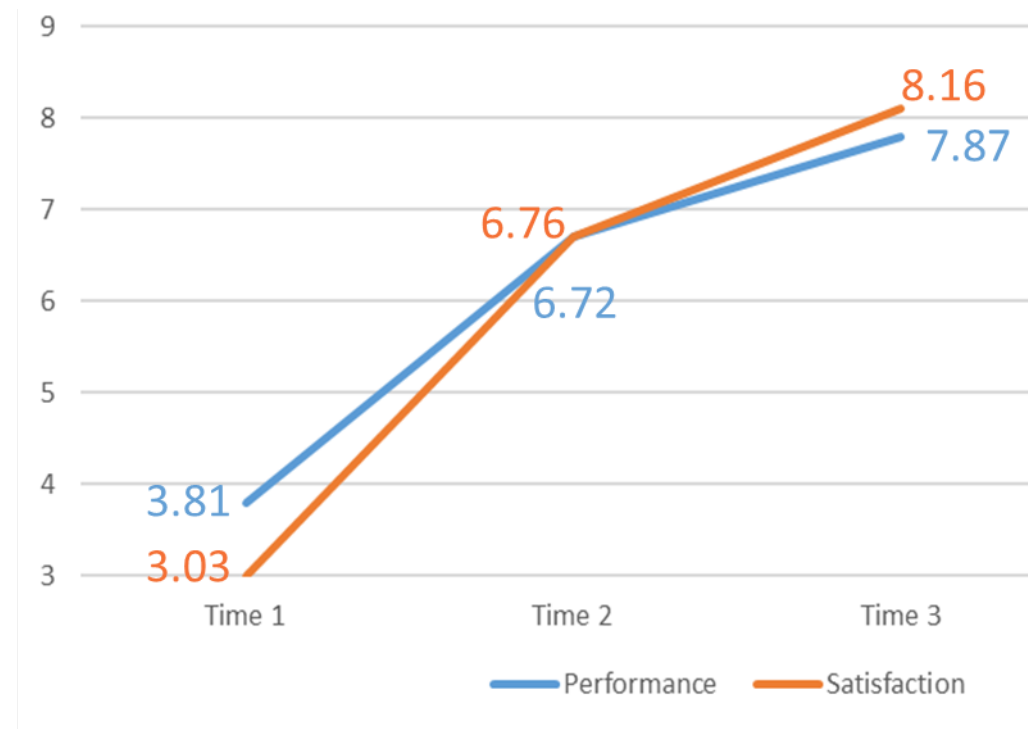
## Class

Joining a 'birthday club' at school

Presenting computer games in class

Engaging in adapted games during gym class

# Children's outcomes: change in performance of participation goals



Performance:  $F=46.15$ ;  $p<0.001$ ; Satisfaction  $F=67.43$ ;  $p<0.001$

# The impact of PREP on body-functions

# Project BEYOND (Body-function Enhancement for YOutth through participationN in real-world contexts)

- Motor
- Cognitive
- Affective

Participation



Body functions



**Playing football**

# Participant Description (BFPG\_13)

## Playing Football

- 21 years old male
- **Health issues:** CP, using a wheelchair, multiple disabilities
- **Functional issues:** remembering new info, reacting to sensations, moving around, using hands to do activities, managing emotions, controlling behavior or activity level, seeing.

# Activity Description (BFPG\_13)

## Playing Football

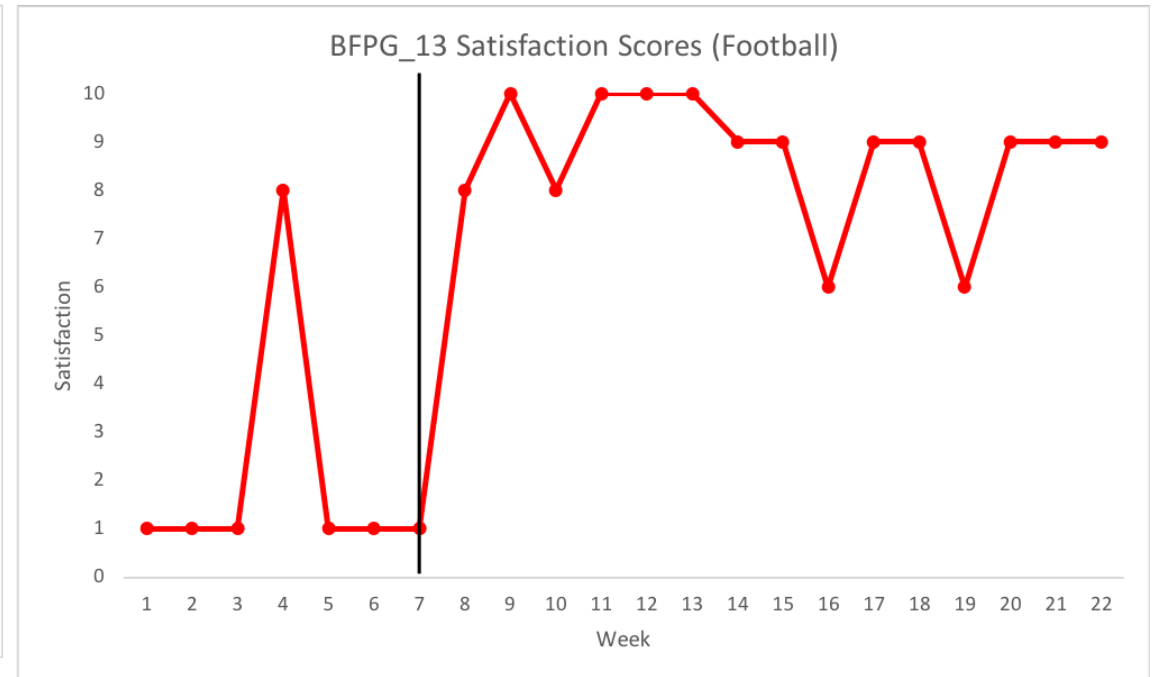
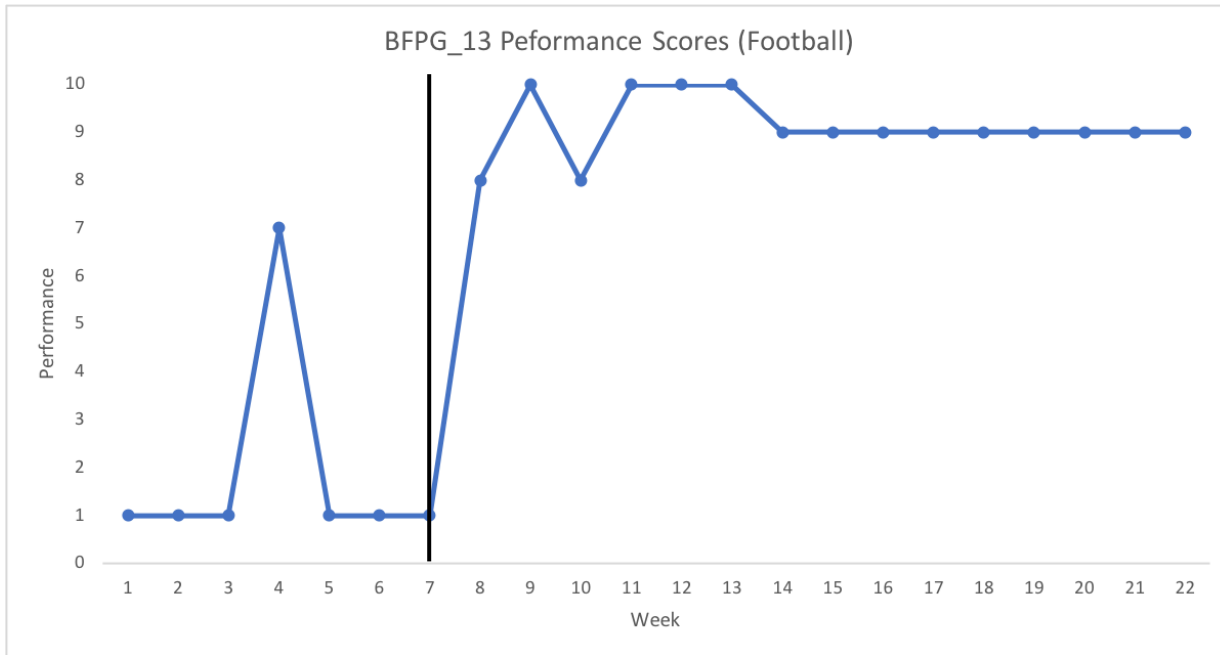
- Football coach (former professional football player, 30 years of experience) with Dragons Football Club (football association near participant's home)
- Participant attended practices with Dragons Laval with **in addition** to weekly sessions
  - Participant met with other football players his age
  - Participant was given clothing, equipment
- Participant could meet professional football players
- Adjustments to wheelchair: seatbelt adjustment, use of strap, lower wheelchair used to allow throwing of football

*“The Dragons Football Club has really making the activity a pleasant experience for the participant.*

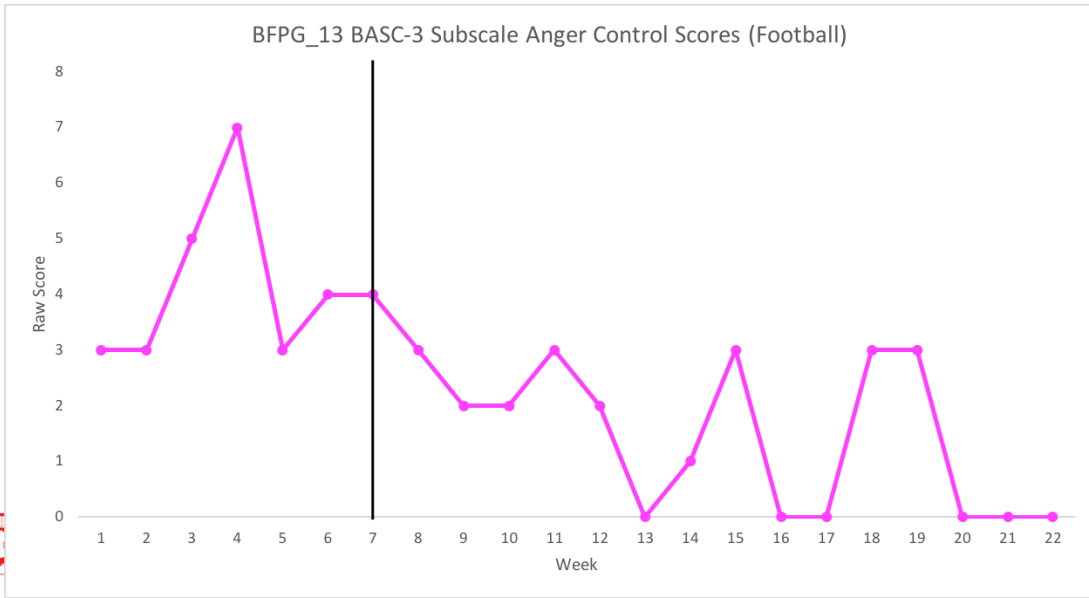
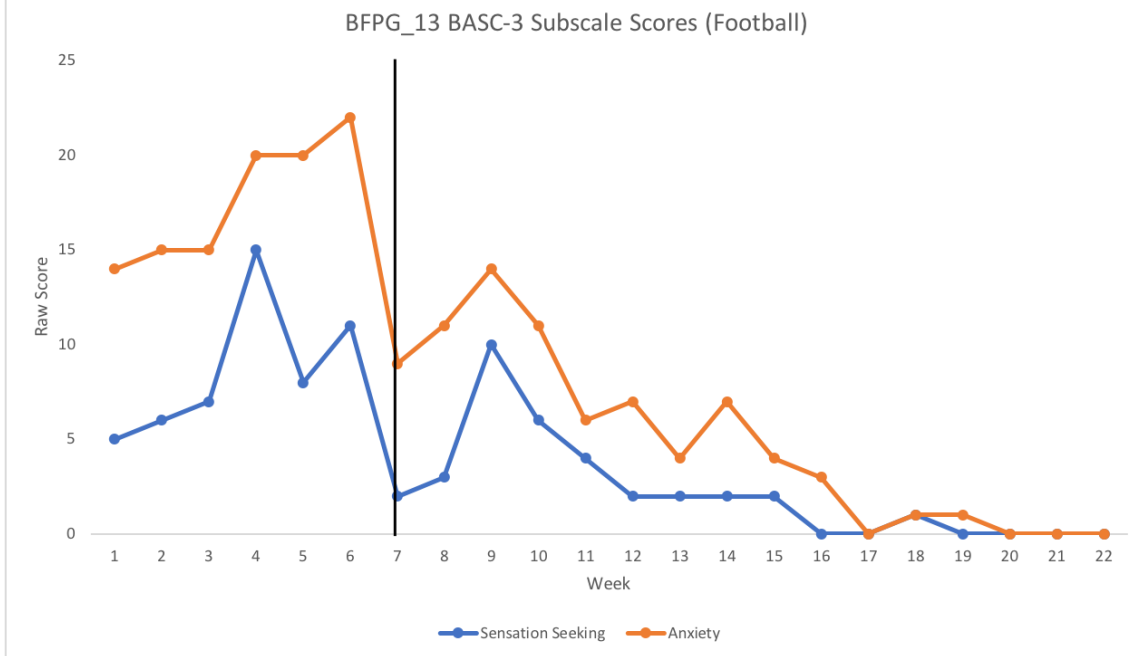
*They are making sure that he has a coach who has a lot of experience (former professional football player) and they offered that he come practice at the same time as the players who are training to play professionally at the university level, so that he is around people his age.*

*They are also asking him if he would like to meet players from some professional football teams, since he is a big fan of football. ”*

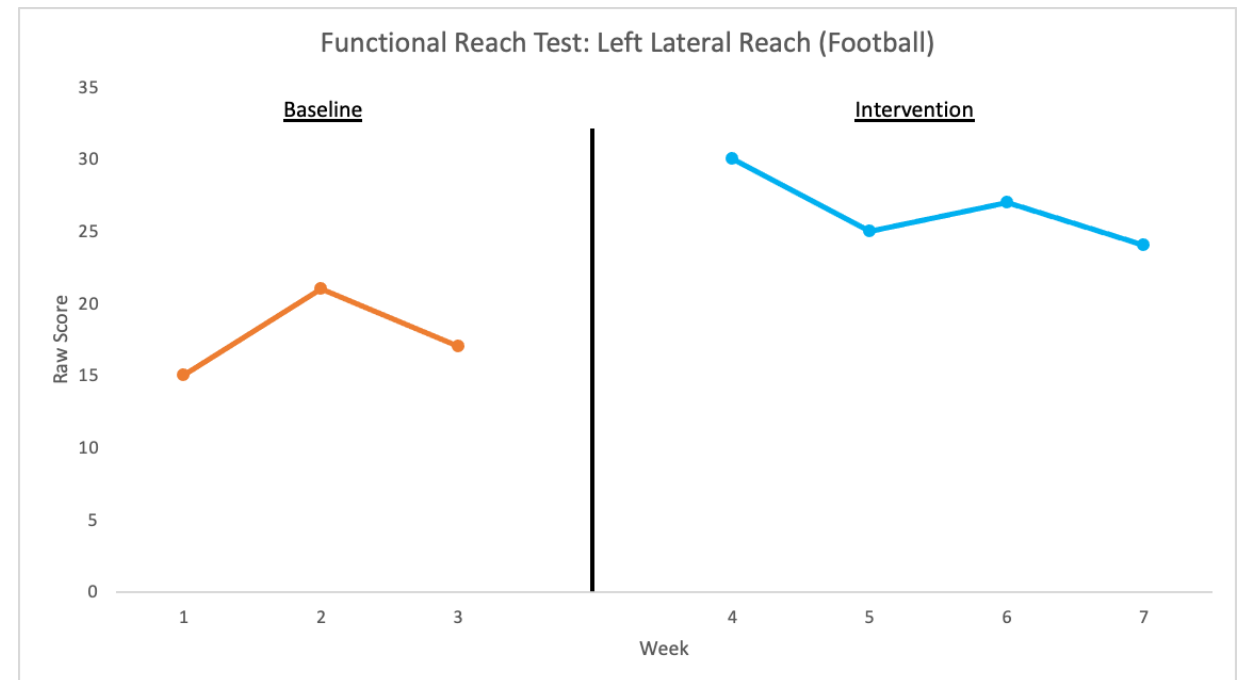
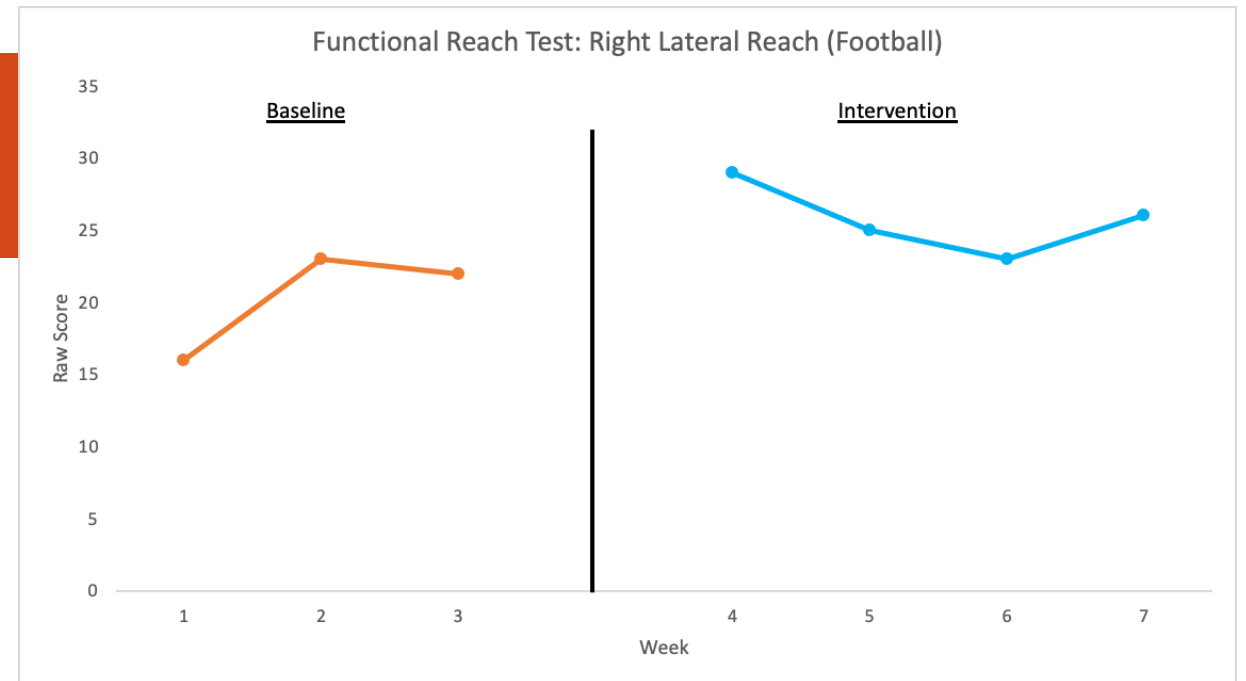
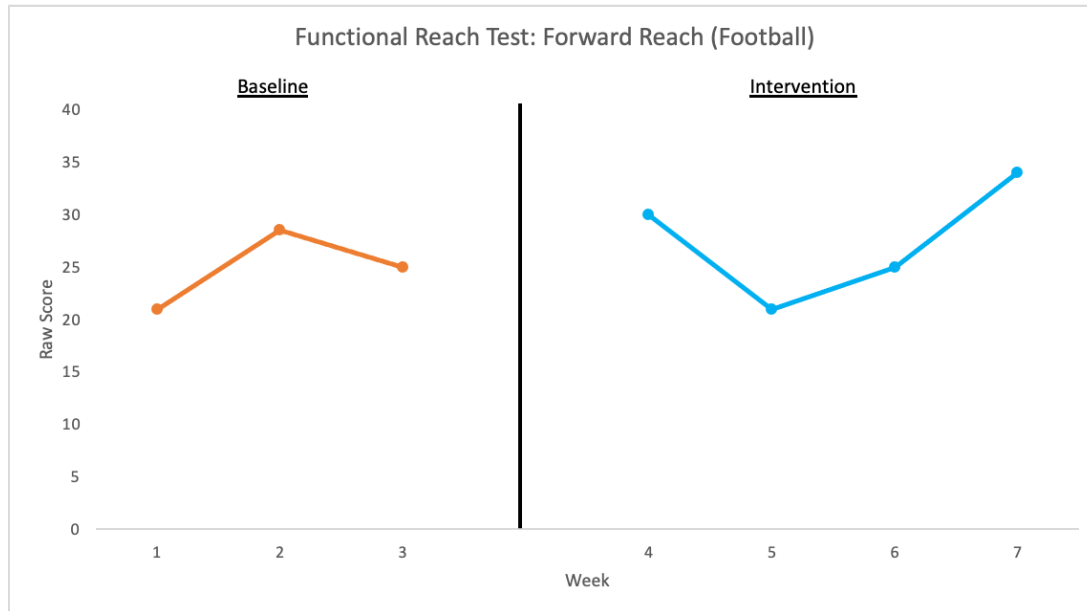
# COPM Scores (BFPG\_13)



# College BASC-3 Subscale Scores (BFPG\_13)



# Motor (BFPG\_13)



# Interview with BFPG\_13

- *Did the activity have impact on other functions for you?*
  - “It [playing football] was a good exercise for my [right] arm.”
  - “...and my mind.”
- *Anything else?*
  - “[It is] one of my favorite sports to do.”
  - “I was happy, very happy.”
- *What is your advice for other youth?*
  - “I would say just go for it.”
  - “Try it out. If you like it, go. If you don’t like it, don’t. That’s my advice.”

Participant <b>Activity Chosen</b>	Body Function Outcomes			Performance Outcome
	Motor	Affective	Cognitive	
BFS_01 <b>Programming</b>	NA	Anxiety✓✓ Somatization --	Attention✓✓ Hyperactivity✓✓	✓✓
BFS_03 <b>Guitar</b>	Pinch ✓✓ Trunk Control ✓✓ Strength ✓✓ ROM ✓✓	Anxiety✓✓ Inadequacy --	Attention ✓✓	✓✓
BFS_04 <b>Swimming</b>	Strength ✓✓ Trunk Control ✓✓ Reaching ✓✓ ROM✓✓	Anxiety✓✓ Social stress --	Hyperactivity✓✓	✓✓
S3 <b>Piano</b>	Grip ✓✓ Strength (thumb abd) ✓✓ Strength (wrist ext) ✓✓	Self-Esteem ✓✓ Inadequacy✓	NA	✓✓

✓✓ Significant Improvement; -- Stable



Participant <b>Activity Chosen</b>	Body Function Outcomes			Performance Outcome
	Motor	Affective	Cognitive	
BFS_02 <b>Drawing</b>	Strength (R/L Wrist Ext) ✓	-----	NA	✓✓
BFS_05 <b>Swimming</b>	<ul style="list-style-type: none"> <li>• Forward Reach ✓</li> <li>• PROM (R/L Hip Flex, L Hip Abd) ✓</li> <li>• ROM (R Hip Flex) ✓</li> </ul>	Self-Esteem ✓	NA	✓✓
BFS_06 <b>Walking</b>	<ul style="list-style-type: none"> <li>• Strength (R/L quad, R/L ham, R/L calf) ✓</li> </ul>	<ul style="list-style-type: none"> <li>• Anxiety ✓</li> <li>• Sense of Inadequacy ✓</li> </ul>	NA	✓✓

# The magnitude of the overall intervention effect

Outcome	ES
Attention	0.57
Hyperactivity	1.45
Anxiety	0.21
Sense of inadequacy	0.21
Activity Performance	4.60

## Motor outcomes

A large change of **3.7 SDs** from baseline was observed over the course of the intervention.

# Publications

PHYSICAL & OCCUPATIONAL THERAPY IN PEDIATRICS  
2021, VOL. 41, NO. 2, 115-119  
<https://doi.org/10.1080/01942638.2021.1875739>



## Participation during a Pandemic: Forging New Pathways

Dana Anaby <sup>a</sup>, Mallory Ryan <sup>a</sup>, Robert J. Palisano <sup>b</sup>, Mindy F. Levin <sup>a</sup>, Jan Willem Gorter <sup>c</sup>, Lisa Avery <sup>d</sup>, Isabelle Cormier <sup>e</sup>, Rachel Teplicky <sup>c</sup>, Janice Coulter <sup>f</sup>, and Julia Hanes <sup>c</sup>



Original Article | Free Access

## Improving body functions through participation in community activities among young people with physical disabilities

Dana Anaby , Lisa Avery, Jan Willem Gorter, Mindy F Levin, Rachel Teplicky, Laura Turner, Isabelle Cormier, Julia Hanes

PHYSICAL & OCCUPATIONAL THERAPY IN PEDIATRICS  
2022, VOL. 42, NO. 5, 526-541  
<https://doi.org/10.1080/01942638.2022.2037809>



## Implementing Pathways and Resources for Engagement and Participation (PREP) for Children with Disabilities in Inclusive Schools: A Knowledge Translation Strategy

Michal Waisman-Nitzan <sup>a</sup>, Yonat Ivzori <sup>b</sup>, and Dana Anaby <sup>a</sup>



ELSEVIER

Go to Contemporary Clinical Trials Communications on ScienceDirect

## Contemporary Clinical Trials Communications

Volume 28, August 2022, 100942



## The impact of parent involvement on improving participation of children born preterm: The story in the baseline

Hazel Killeen <sup>a</sup> , Dana R. Anaby <sup>b</sup>



Original Article | Free Access

## The effectiveness of the Pathways and Resources for Engagement and Participation (PREP) intervention: improving participation of adolescents with physical disabilities

Dana R Anaby , Mary Law, Debbie Feldman, Annette Majnemer, Lisa Avery

# Take home messages

- Participation-based interventions can impact **body-function** level outcomes and improve **overall participation** patterns.
- Meaningful **'real-life'** youth-engaging interventions are powerful and can result in a range of benefits.
- The **environment** is key to young people's participation and can serve as an effective target of **intervention**.

# Acknowledgments

- Mary Law
- Michal Waisman-Nitzan
- Yonat Ivzory
- Hazel Killeen
- Prana Khayargoli
- Noah Margolis
- Colin Hoehne
- Lisa Avery
- Bob Palisano
- Mindy Levin
- Jan Willam Gorter
- Mallory Ryan
- Rachel Teplicky
- Laura Turner
- Isabelle Cormier
- Julia Hanes
- Janice Coulter



# Thank you!

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