



A STUDY ON PARENTS PERSPECTIVES ON FLASHFIT ASSISTIVE INTERACTIVE DEVICE ACTIVITIES IN CHILDREN WITH MULTIPLE DISABILITIES

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Abstract

Aim: *To determine the parent's perspective towards FLASHFIT assistive interactive device activities for children having Multiple Disabilities.*

Background and purpose: *The method of interactive play should be inclusive, adapted for children with special needs to facilitate move, measure and motivate with fun. The interactive play should motivate the children for active participation and involvement in the adapted play material.*

Method: *The study has been done among the parents of children with Multiple Disabilities in the age group 3- 18 years. 15 parents were selected from NIEPMD Model School. Children are belonging to different age and category of disabilities such as Cerebral Palsy with Intellectual Disability, Deaf blind, Autism with Intellectual Disability, Attention Deficit Hyperactivity Disorder and Children from Inclusive Preparatory School etc., The Children with Multiple Disabilities was involved in the Interactive play with FLASHFIT devices/material along with conventional rehabilitation program such as Special education, Psychology intervention, Occupational Therapy, Physiotherapy etc., The questionnaire was used to identify the effect of FLASHFIT Assistive Interactive Device activities and active participation for children with Multiple Disabilities.*

Result: *After the activity, the parent group reported that their children improved both physically and mentally with positive outcomes.*

Conclusion: *FLASHFIT Assistive Interactive Device activities help on improving overall skill development for the age group of 3 to 18 years as reported by parents of children with Multiple Disabilities*

Key Words: *Multiple Disabilities, Interactive assistive Devices, FLASHFIT.*

Introduction

The International Classification of Functioning, Disability and Health (ICF) conceptualises daily functioning and disability holistically across the interrelated domains of body functions and structure, activity, and participation. Participation at home, school, and in the community benefits a child's development and gives them the chance to acquire the skills they need to make the transition to adulthood. Understanding, monitoring, and maximising engagement for children with disabilities is a common goal in children's rehabilitation due to its link to improved developmental outcomes. The active participation of children and parents in all facets of the therapeutic process can be characterised as participation in children's rehabilitation. Rehabilitation programmes may have as their main objective maximising life participation for children with disabilities. Children with special needs may encounter limitations in their mobility, functioning, and general well-being. Interactive Play is the



greatest tool for learning comprehensive development such as physical, cognitive, emotional and social skills for pre-schooler. It promotes positive self-esteem and confidence. In the past few decades’ play has been reduced and methods of play also changed. Play varies from culture to culture. Nowadays children are drastically increasing in sedentary lives, with physical activity frequently displaced by electronic gadgets such as television, mobile, tablets or laptop etc.,. Because many COVID-19 affected countries have closed ordinary school classes, effective physical activity might not be sufficiently applied to children outside school; school and physical education lessons usually make the difference and provide both adequate environments and support to encourage children to be physically active (Grao-Cruces et al., 2019; Gu et al., 2018; Hesketh et al., 2015; Eather et al., 2013; Wilkie et al., 2018). A review by Xu et al. (Brouwer et al., 2018; Xu et al., 2015) found family roles to play an important role in promoting children physical activity, thus it might be a critical point to address when implementing health strategies aimed at them, particularly during this lockdown period. Besides, healthy lifestyle habits such as active commuting to schools (i.e walking or cycling), which has been linked to increasing both overall physical activity and physical fitness, and reducing sedentary behaviour (Aires et al., 2011; Aparicio-Ugarriza et al., 2020), have been partially or totally restricted due to COVID-19 governmental measures (i.e. measures vary depending on the country, although those most affected by COVID-19 have closed schools during, at least, several weeks, with some countries also restricting the ability to leave the home). Whether there is a link between higher levels of physical activity and an improvement of the immune function in children needs to be further investigated (Timmons, 2007). Due to a probably drop of physical activity levels in countries with more restrictive lockdown measures regarding COVID-19, risk of fractures might increase among children populations (Alshamrani et al., 2019. According to Mann, Williams, Ward and Janelle (2007, p. 457), perceptual–cognitive skills relate to the “ability to identify and acquire environmental information for integration with existing knowledge such that appropriate responses can be selected and executed”. Many findings from the expertise domain seem to corroborate that performance in these strongly visually guided interactive games is—along with motor skills—based on perceptual–cognitive skills.

Methodology

Study design	Experimental Study
Sample Size	15
Sampling method	Convenient sampling (Random sampling)
Study Setting	NIEPMD Model School
Study Duration	6 weeks
Inclusion Criteria	1. Age of children ranging between 3-18 years of both genders. 2. Children who can understand follow commands given by trainer.
Exclusion Criteria	1. Children with cardio vascular disease, Convulsion or any other complications.
Materials	FLASHFIT Assistive Interactive Devices.
Outcome Measure	Questionnaire (Likert Scale)

Procedure

Fifteen children who fulfilled the inclusion criteria and given the consent to participate in the study were taken. They were from NIEPMD Model School and Inclusive Preparatory School at NIEPMD based on inclusion and exclusion criteria. The adapted physical education as adjunct with rehabilitation services such as Special Education, Occupational Therapy, Physiotherapy, Psychology and Speech



Therapy was given for children with special need belong to different category such as Intellectual Disability, Cerebral Palsy, Autism and Deaf blind. Target group consists of 15 children who were given adapted physical education through FLASHFIT products which includes IFLOOR, PODS, IWALL, IPUNCH, IKICK, ITRACK, IBALL, ICORE and IJUMP. The questionnaire was collected from 15 parents after 6 weeks of session.

The Effects of interactive assistive device activity are summarised in Figure 1

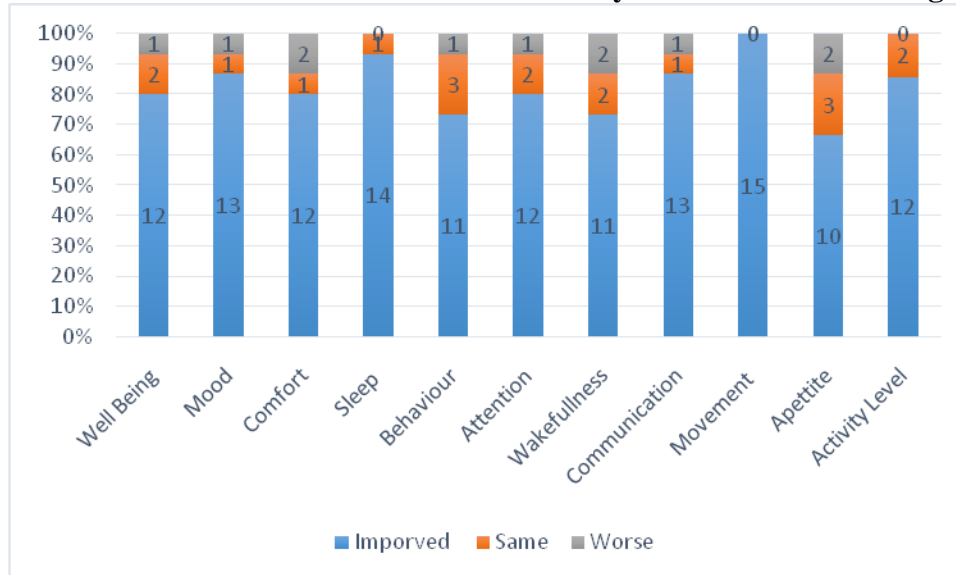


Fig1: Stacked bar chart of the effects of FLASHFIT Interactive assistive device activity on each domain ranked from the most to least positive effect.

• **Quality of living**

Wellbeing improved in 80.0% of children with Multiple Disabilities, mood in 85% and Comfort level increased in 80%, and one child was experienced a less comfort after the session.

• **Cognitive Functions**

After interactive session, spontaneous communication level improved 85%, attention level improved 80% and the behavior improved for 70% of children.

• **Activity and movements**

Multi directional movements are improved in all the children 100% and activity level has been improved by 85%.

• **Sleep and Eating**

Sleep improved among 90% of children and wakefulness for 65% after an interactive session, Appetite improved in 60% and there is no evidence of none experienced worsening of appetite.

Discussion

The aim of this study was to explore parent’s perspectives on the effects of FLASHFIT assistive interactive devices in children with multiple disabilities. We focused on parent feedback regarding how this session impacts on their child living style. Overall parents reported the improvement of major four domains namely their happiness, attention, movements, and sleep. The interactive game improved 80.0% of wellbeing of children with Multiple Disabilities. Fun filled environment creates more positive impact in children mood. After the session mood improved by 86.6% and also due to lack of stress they






are all feel more comfort in participating in FLASHFIT interactive activities. Impaired attention is known as a pervasive behaviour disturbance, with a negative influence on learning processes. Regarding mental function this session play an important role, where attention has been improved significantly by 80% and spontaneous communication improved by 85%. Creating attention and improving reaction time which impacts in creating positive behaviour among children with multiple disabilities. After this session the behavior improved for 70% of children.

Physical movements are more important for daily living this program shows 100% improvement in movements of children. It reduces difficulty in basic physical mobility, and helps to build gross and fine motor skills. Generally physical activities have positive effects in sleep and wakefulness among children with multiple disabilities. FLASHFIT interactive activities improved sleep and wakefulness in above 90% of children with multiple disabilities. Further prospective studies would be useful to confirm the findings by the direct observation of the effects of adaptive sports both during and after the activity.

Adapted Physical Education through FLASHFIT Interactive Assistive Devices:

S.No	Activities	
1.	<p style="text-align: center;">1st FLOOR</p> 	<p>FootEye Coordination -Stand on legs apart and keep tracking and use foot to step on the moving green light on the floor.</p> <p>Split Decision - Stand on legs apart and keep watching and use foot to step on moving green light suddenly blue, red appears step on blue by ignoring red.</p>
2.	<p style="text-align: center;">I WALL</p> 	<p>EyeHand Coordination -Stand in front of IWALL and keep tracking and use hands to touch on the moving green light.</p> <p>Peripheral Awareness - Stand in front of IWALL and touch the constantly changing cyan colour at the centre while at same time respond to peripheral target green colour while avoiding red target.</p>




<p>3.</p>	<p style="text-align: center;">PODS</p> 	<p>Directional Awareness – Stand in middle of pods which is placed in four different directions. A pod activates you have to track each direction and move accordingly to deactivate pods. Reaction Time - Stand in front series of Pods and wait for a pod to light up and respond quickly as soon as possible.</p>
<p>4.</p>	<p style="text-align: center;">I PUNCH</p> 	<p>Inhibition - Stand in front of IWALL and punch the green target before it disappears and do not punch the red target wait until it disappears. Quick Hand - Stand in front of IPUNCH and all lights will light ups, punch to deactivate lights as fast as you can.</p>
<p>5.</p>	<p style="text-align: center;">I CORE</p> 	<p>Discrimination-Sit on ICORE in the sit-ups position, two colour lights will appears and the goal is to avoid red colour and react to green while doing sit-ups. Hitting red colour leads to penalty. Prioritization – Lay down on ICORE in plank position. Lights appears anywhere within ICORE, they starts with green over time it turns to red. The goal is not to let anyone light to turn red.</p>



6.	<p style="text-align: center;">I TRACK</p> 	<p>Foot Reaction - Stand on legs apart and keep watching and use foot to step on the moving green light quickly as possible before it diminishes.</p> <p>Fast Feet - Stand in front of ITRACK and all lights will light ups, run to deactivate all the lights as fast as you can.</p>
7.	<p style="text-align: center;">I KICK</p> 	<p>Clear All - Stand in front of IKICK and all lights will light ups, kick or punch to deactivate all the lights as fast as you can.</p> <p>Short Term Memory - Stand in front of IKICK, light appears in an order and diminishes and the goal is to memorize the order and location of lights that appears and enable the lights in the same order by kicking or punching.</p>
8.	<p style="text-align: center;">I JUMP</p> 	<p>First Step Quickness- Stand on legs apart and keep watching the IJUMP boxes and use foot to step up on the light activated box quickly as possible before it diminishes.</p>



9.	<p style="text-align: center;">IBALL</p> 	<p>Accuracy - Stand in middle of IBALL and keep watching to light gets activated and put the ball inside the light activated hole before it diminishes.</p>
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Results

The result of this study from the table indicates that the parent largely reported positive outcome both mentally and physically. Beyond these there is significant improvement in participation in Home, School and Community in line with fundamental rights and World Health Organisation goals.

Conclusion

From the result of this study, it was concluded FLASHFIT assistive interactive device along with conventional rehabilitation services has shown significant improvement in child’s active participation. Further investigations are certainly needed to assess effectively the effects of the interactive play in larger sample.

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