

TARGET HITTING GAME

Rehabilitation Science - Occupational Therapy

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Abstract: The project aimed to improve, maintain and learn performance components i.e. sensory motor, perceptual, cognitive and psychological through 'Target Hitting' game which consists of 3 bases as follows: Base 1- square shaped board with Velcro on it with different colour, each colour has scoring points. Base 2- Played like magnetic dart game includes different colours, numbers and moods. Base 3- Dart game with eight division board having green and yellow colour alternatively, with right left discrimination. This game revolves around hitting at a particular given target with Velcro wrapped ball or magnetic dart, it is wall hanging stationary game, which helps children with Attention-deficit/hyperactivity disorder, Autism, Cerebral palsy, Developmental Delay, Learning Disabilities, Sensory processing disorder as well as in other conditions like Frozen shoulder, Stroke, Parkinsonism, Cognitive Impairment, Mood disorders, Memory loss/ Short Attention span etc. As a result, we found that hitting game helped to improve sensorimotor performance in children and adult, also helped in shaping perceptual abilities, and helped in connecting children's work (play) in improving overall wellbeing, by providing communication, social interaction and feeling of competition. Used as an effective way of addressing Game as therapy.

Keywords: Target Hitting, Cognitive impairment, sensory-motor system and problem-solving skills

Introduction

There are various components in Occupational Therapy, aspects of functional ability required for **Occupational performance**; they were grouped into various types of components mainly **sensorimotor, cognitive and psychological**.

Occupational therapy theory, practice and research have increasingly emphasized the transactional relationship between person, environment and occupation. Occupational performance results from the dynamic relationship between people, their occupation and roles, and the environments they live, work and play, **Mary Law Barbara cooper Susan strong Debra Stewart**.

The whole project emphasis on hitting at a particular given target, it includes variety of other components involved, at different levels.

Basically, its emphasis more eye hand coordination which is due to any of the condition that will be discuss later on, including body movements, visual perception, cognition (calculation, attention, memory), colors, numbers, psychological (mood, positive /negative reinforcements), develop command following and left right discrimination.



Base 1 :Project is about hitting and scoring, it is wall hanging stationary type of game, participant will stand in front and try to hit at particular point with light weighted plastic ball given with Velcro wrapped around it so that it will give hook and loop system, then therapist will instruct and give points on that.

About base 1: It has square shaped base, with Velcro on it, put in different colors, participant will hit at different colors, all colors have marks.

It may or may not be demonstrated first by therapist, participant will hit and score been noted, therapist may modify this game accordingly.

Activity 1- played with others like a competition.

Activity 2- played alone and will give rewards.

Activity 3- played for therapeutic use only (in case of adults)

Example: The participant hit at blue at first attempt, then blue, then black, so score will be calculated as $20+20+10= 70$ or children will calculate by themselves

Score sheet:

RED	10 points
BLUE	20 points
BLACK	30 points

Peach colour is used to discriminate between colours.

Components Involved:

- ✓ Color perception
- ✓ Visual perception
- ✓ Self esteem
- ✓ Eye hand coordination
- ✓ Calculations

Dimensions and Details:

- ❖ Canvas board = 30 x 30 inch
- ❖ Velcro roll = Red x 7.5 meters

Blue x 4 meters

Black x 2.5 meters

Peach x 1.2 meters

BASE 2: In this, participant will hit with dart on magnetic dart board given in front, participant will stand at particular distance and try hit at different color with dart. Magnetic dart board includes different colors, numbers, and moods.

About the base 2: This is square shaped made with canvas board. Magnetic sheet stick on canvas board, so magnetic dart when thrown glued at board. We will provide seven magnetic darts, thrown one at a time by the participant, it is painted with acrylic colors.

Therapist will emphasis on maximum two components at one level of game.

e.g.: Numbers or mood with colors.

Mood Chart:

Anger	Red
Fear	Orange
Energetic	Dark green
Depressed	Dark blue
Happy	Yellow
Sad	Purple
Calm	Light green
Joyful	Light Blue

➤ Numbers and colors: Numbers are magnetic removable type, from 1 – 8 .We will put them randomly on magnetic dart board, and ask the participant to hit at or around particular number given by instructor.

Activity 1- Ask participant to hit at particular number at once, one number, one hit at time.

Activity 2- Tell the participant few numbers in random sequence, and ask him to hit in that sequence only after period of interval. e.g.: hit 2,4,6,8

Activity 3- First we ask the participant that which number is on which color? Then ask to hit

Activity 4- Ask the participant to hit at Red and ask him the number given on it.

➤ **Components Involve:**

- ✓ Color perception
- ✓ Number perception
- ✓ Eye hand coordination
- ✓ Moods
- ✓ Memory

Dimensions and Details:

- ❖ Canvas Board (white) = 20 x 20 inch
- ❖ Magnetic sheets = A4 size x 5.5 sheets used
- ❖ Magnetic darts x 3
- ❖ Oil sheets x 2 sheets used
- ❖ Acrylic colors = Camel Artist's Acrylic Colors

BASE 3: In this participant will hit at a particular target instructed by therapist from a distance with dart on magnetic board which is made of canvas board, then magnetic sheet stick on canvas board, so magnetic dart when thrown glued at board and finally painted. We will provide seven magnetic darts, thrown one at a time by the participant

About base 3- Having eight division in colors Green & Yellow alternatively, with right/left and up/down divisions. It will have following targets:

Activity 1- Hit right green /hit left green / hit right and down or up green/ hit left and down or up green.

Activity 2- Hit right yellow/ hit left yellow/ hit right and down or up yellow/ hit left and down or up yellow.

Components Involve:

- ✓ Color perception
- ✓ Throw (eye hand coordination)
- ✓ Right Left Discrimination
- ✓ Up down Discrimination
- **BOX FOR STORAGE:** Rectangular Box is made to store elements of project, it contains:
 - 6 Magnetic Darts (2 green, 2 red and 2 yellow)
 - 6 Plastic Balls (each covered with red Velcro)
 - Circular magnetic stickers (1 to 8)
 - Circular magnetic stickers (different moods)
 - **FRAME HOOK:** Metal Hook is used to hang the project frame to make it stationary at one place, using screws and hammer.

PROCEDURE

STEP 1: Stick Velcro on canvas board 1

STEP 2: Drill the centre of canvas board 1

STEP 3: Stick the magnetic sheets on canvas board 2

STEP 4: Stick the oil Sheet on magnetic ground 1

STEP 5: Colour it and make a hole at the centre

STEP 6: Make 8 Circles with oil paper and stick circular magnetic sheet at the back of it and Write numbers in front

STEP 7: Make Different emojis with oil paper and stick magnetic sheet at back of it and put various moods in front.

STEP 8: Stick the magnetic sheets on Canvas board 3

STEP 9: Stick the Oil sheet on magnetic ground 2

STEP 10: Colour it and drill at the centre

STEP 11: Write Right/left and up/down with marker

STEP 12: Combine canvas board 1, 2 and 3 together by nut and bolt.

DISCUSSION

Our project holds the promise of increasing compliance in patients and enhancing the use of positive impact games. Yet for all the promises, existing research indicates that not all games are created equal.

Target games are based on a free participation, and their development is circumscribed in time and place. Games are structured according to specific rules. **Piaget (1945)**, for instance, observed that different stages in the psychological development of children correspond to different stages in play development. The perceptual play, based on perceptual and motor pleasure characterizing the first months of life, is substituted by the symbolic play, individual and subjective, focused on imagination and fantasy. Later, even the symbolic play will be gradually replaced by games with rules, involving a group of participants with different and specific roles imitating the real world.

Manipulating objects, accomplishing tasks and activities the child is also actively shaping an idea; stimulated by his/her needs and the pleasure to explore, playing the child will learn to know his/her environment. Cognitively, different games involve different kinds of skills.

Target game, involving the **sensory-motor** system and problem-solving skills (**Morganti, Gaggioli, Castelnuovo, Bulla, Vettorello, & Riva, 2003; Gourlay, Lun, & Liya, 2000; Cameirao, Bermúdez, Badia, Duarte Oller, Zimmerli, & Verschure, 2007**). **Green & Bavelier (2006)** identified several improvements in gaming activity, from reaction times to spatial skills, and highlighted the chances to use this kind of media to improve cognitive functions in individuals with particular needs for training and retraining of individuals with special health-related problems (such as young disabled or elder people) involving the nervous system.

Motivation has also proved to be enhanced by the use of target game in the training of the upper limb in children with cerebral palsy (CP) (**Jannink et al., 2008**). **Spatial cognitive** enhancement regarding spatial skills and reaction times is increased (**Green and Bavelier 2007**). Another category of special players are young people affected by Attentional Deficit Hyperactive Disorder. It seems to increase concentration, task completion, visual tracking, short term memory, and the ability to ignore distractions: Even though target games have been successfully involved in rehabilitation.

Game based spatial training is effective for children with complex disabilities, particularly when combined with training that remediates cognitive weaknesses.

Games may be an effective way of addressing the problem of engagement in therapy and analyses which game design patterns may be important for rehabilitation. We present a number of serious games that our group has developed for upper limb rehabilitation.

CONCLUSION

From this study in which we demonstrated target hitting in context to occupational therapy performance components we conclude that:

- Hitting games may help to maintain and improve sensorimotor performance in children and adults.
- It also helps in shaping perceptual abilities.
- It connects performance, to children's work (play) and helps to improve their overall wellbeing.
- Covers various other components like mood, attention, memory etc.
- Provides communication, social interaction and feeling of competition.

Hence, its emphasis on Game as therapy which directly connects to occupational performance of a person.

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