



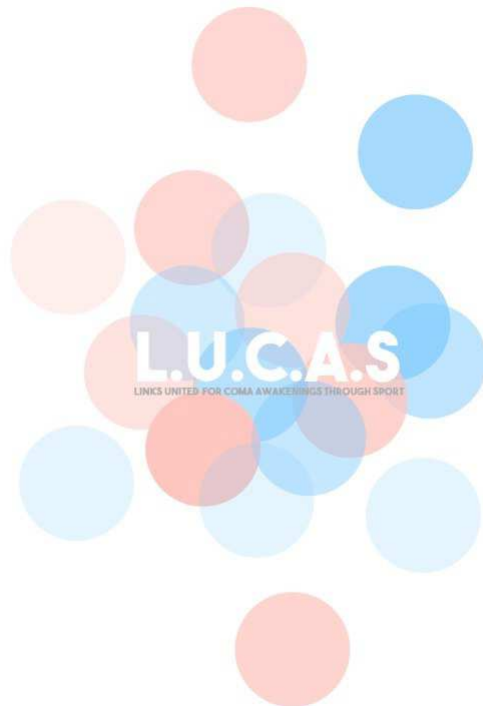
LUCAS

Links United for Coma Awakenings through Sport

CASE HISTORY

Country: Denmark

Organization: Aalborg University



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A case history in applying/testing the LUCAS' process and methodology

A story of the experience of people involved that can be an highlight as a significant case study as far as the use of the LUCAS' methodology is concerned

- 1) **Description of the case history** (lessons organisation + sport applied/movement activities/physical activities as tools and means to achieve the expected objectives and results)

Institution: Special pre-school

Activity and tool: Hoppolek (see below)

- 2) **Beneficiaries** (beneficiaries of the case history indicating type, and type of disability etc.)

Child: Elina, 4 years of age. Acquired brain injury and visual impairment

Operator: Sussie. Special pedagogue

CASE SCENARIO

Elina is 4 years of age, she has acquired brain injury and is visually impaired. The preschool where Elina spends her days, considers the play with the Hoppolek device as important as eating – a basic need. Hoppolek offers Elina possibilities to play and at the same time become physically active; she can jump and feel the whole body, rotate like in spinning or in dancing, experience vibration through her body, as well as listen to music in her own pace and on her own premises. In other words, through the Hoppolek, Elina is in control and can, thereby, experience self-agency. Something she otherwise have difficulties with as she due to her special needs is dependent on other people throughout the day. Sometimes when Elina does not want to play with Sussie, her operator, she presses the green button on the Hoppolek as she then can rotate and turn her back towards Sussie to communicate that she wants to be by herself now without intervention from Sussie. At other times, Elina feels like dancing and presses both the yellow, green and black button to jump, rotate and play music, she laughs and shouts to Sussie to join her in the dance. Elina plays with Hoppolek every day and she has developed many skills and capacities through this regular use of the tool, both psychologically, physically, and socially.

Sussie knows that when Elina is positioned in the Hoppolek, she wants no help but want to decide upon the activities by her own. She invites Sussie to participate, but it is Elina who is the master. Therefore, Sussie is very careful when she interacts with Elina, she takes a step back and awaits Elina's intentions, which she, then, facilitates on Elina's premises. Sussie often improvises in the interaction with Elina and she uses imitation as a tool to communicate to Elina that she enjoys the situation.

- 3) **Involved Organizations**

Special pre-school

- 4) **Outcomes** (Indicating the results that have been achieved at the end of the activity)

See above – the case scenario

- 5) **Success and Challenges** (positive aspects and critical points)

See above – the case scenario

Description of the Hoppolek

The pilot case study by the Danish partner included seven children between 5 and 14 years of age and their operators. Acquired brain injury (ABI) was a part of all children's diagnosis. The LUCAS methodology was adapted to the *Hoppolek* (jump and joy) programme targeting joyful physical training for children with disabilities.

Hoppolek is a medical device for play and mobility, Class IIa (see Figure 1).



Figure 1: Hoppolek device

Dimensions: The height of Hoppolek is 150-180 cm, depending on the adjustment of the stand (a form of upright spine that parts lock onto); the weight of the base is 43.5 kg; and the stand with knee, pelvic and trunk supports and manoeuvrable arms weighs 10 – 12 kg. The length of the platform is 74 cm and the width is 65 cm. Manufacturing materials consist of steel plate; platform 4 mm, and the other details 2-3 mm.

The device includes a control panel with yellow, red, green, blue, and black buttons. By pressing these buttons, it is possible to experience vibrations, bounces, and rotations – either individually or together (i.e. 1, 2, or 3 feedbacks simultaneously). The vibration is oscillating motion around a horizontal axis simulating a sine wave with peak-to-peak displacement being 0.2 mm, with frequency of 40 – 42 Hz, and acceleration of 33.35 m/s^2 . The dynamic bounces are 3 cm, numbering 77 bounces/min with an acceleration of 17.65 m/s^2 (1.8 G). The rotation has a load on the base of 67 kg: 8.5 revs/min and without any load 10 revs/min. Furthermore, a CD player can be connected for child-control by a button press. The device is patented. The measurements are conducted by Löfgren Engineering AB with Vibro Scanner, Netter vibration.

The child stands on the round platform (see Figure 1), with or without standing shell, and is strapped in a safe way. By pressing the above-mentioned buttons, the child controls the feedback vibrations, bounces,

and rotation and can, thereby, play and enjoy activities such as spinning, jumping, dancing, and at the same time physically train and strengthen the skeleton (Dalén, 2011). Based on this, the aim of Hoppolek is to offer children with disabilities possibilities to joyful physical activity on their own premises.

The device is manufactured by Jump & Joy AB, Törnrosvägen 72B, SE-181 61 Lidingö, Sweden. The CEO and founder of Hoppolek, Ylva Dalén, is graduated as a physiotherapist and has a degree in specialpedagogs at the Swedish School of Sport and Health Sciences in Stockholm, Sweden.

Furthermore, she has a licentiate degree from the doctoral students program at the Department of Neurobiology, Care Sciences and Society, Division of Physiotherapy, at Karolinska Institutet, Stockholm, Sweden. Dalén has functioned as an expert in the Danish LUCAS methodology pilot case study and she has set up the field studies carried out within this pilot case study.

Physical activity as ‘sport’ in the context of children

In line with the definition of the term *sport* applied within the LUCAS methodology, sport can be considered as an activity involving physical activities and skills where individuals or teams are involved for pleasure and enjoyment. In line with this, related studies (c.f. Physical Activity During Youth Sport Practices, 2011; U.S. Department Health and Human Services, 2008) states that the most common reasons for why children initially choose to play sports are: having fun, learning new skills, making friends and to be challenged. Yet, free play has shown to produce higher levels of physical activity than organised sports. In addition, a genre of sports is termed “mind sports”, where minimal physical activity is involved. Aligned with this, this pilot case study considers the participants’ *self-agency* (Vygotsky, 1978; 1987) as significant. In line with this, we argue that the Hoppolek device intentions, i.e. to create conditions for the child to be in control of own physical activity, is essential and an integral tool in the child’s self-agency in creating a meaningful physical activity for play and development. Drawing upon the concept of the *Zone of Proximal Development* (ZPD) (Vygotsky, 1978), this pilot case study views the physical activity by means of Hoppolek as a situated activity involving negotiation of meaning between the child and the operator guiding the child during the activity.

PROCEDURE

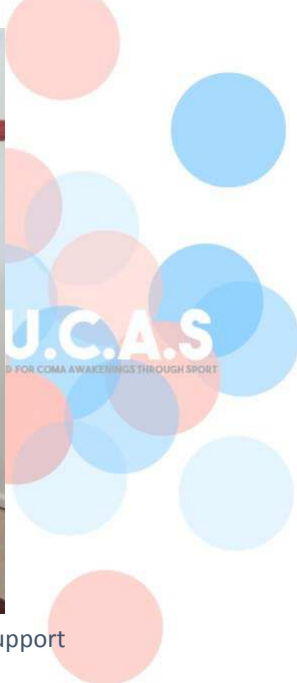
The Hoppolek activity session started with the operator, sometimes assisted by a colleague, placing the child in the Hoppolek device and adjusting the stand with the knee, pelvic, and trunk supports to fit the height of the child. When this is done, the operator secures the straps so that the child is safely positioned to start using the Hoppolek by him/herself (see Figures 2-3).



Figure 2: The operator secures the straps to support the child's trunk and knees



Figure 3: Two operators adjusting the knee and pelvic support



When the child was safely positioned in the Hoppolek device the operator's strategy was to adjust her guidance to the specific child. For example, one child needed minimal intervention from the operator as the child was enjoying the empowering independency that the Hoppolek gave her in terms of being in an upright position and being able to influence her own activity by choosing among the different types of physical activities (jump, rotate, vibrate) available through pressing the differently coloured buttons. Another child, needed more guidance from the operator to get going and also to move from one activity to another. The operator stated that the intervening actions needed to be carefully considered to not interrupt the child's own pace and emotional state (Figure 4 and 5).

The length of the sessions varied between 10 minutes and an hour and took place once a day during weekdays. The variation of the time was dependent on the status of the child the specific day.



Figure 4: Rotating and jumping with Hoppolek



Figure 5: Choosing among the different buttons to press to experience a desired action

6) **Contacts**

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