



PEER-REVIEWED ARTICLE

# STRUCTURED WATER DANCE INTERVENTION FOR ADULTS WITH PROFOUND INTELLECTUAL AND MULTIPLE DISABILITY: DEVELOPMENT AND DESCRIPTION OF THE METHOD

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## ABSTRACT

People with profound intellectual and multiple disability (PIMD) have a combination of severe intellectual disability and extensive physical impairment, which limits their access to health-promoting enjoyable activities, such as dance. For people with PIMD to participate in dance, there is a need for adjustments and support. Thus, to bring dance and music into their everyday life, the Structured Water Dance Intervention (SWAN) was developed in Sweden. This paper aims to describe the development and methodology of SWAN. SWAN was developed from a holistic view on human existence adhering to a bio-psycho-social perspective.

Hence, the key components of SWAN are experience of dance and music, adapted movements, stimulation of the senses, and interaction. In SWAN, the person with PIMD participates in the program in a warm water pool under the guidance of two instructors and in close collaboration with a support person who acts as a dance partner. We conclude that SWAN provides a meaningful activity with the potential to increase wellbeing for individuals with PIMD.

*Keywords: Profound intellectual and multiple disability (PIMD), dance, physical activity, method description, physiotherapy.*

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**André Frank** is a physiotherapist at the Center for Adult Habilitation services in Region Örebro County, Sweden, with over 25 years of experience working with patients with various disabilities. He holds a BA in physiotherapy. For the last years he has been part of the research project SWAN in Örebro, in leading the intervention and assisting in the data collection and analysis. He has a particular interest in patients with PIMD and in developing treatment alternatives for that group.

**Lars-Olov Lundqvist** (PhD) is an associate professor of Psychology and professor of Disability Research at Örebro University, and a research leader at the University Healthcare Research Center at Region Örebro County. His major research focus is on mental health issues in disability and psychiatric health care, including studies on affective responses to aesthetic expressions (mostly music) and social interactions. As principal investigator in various projects (including the SWAN), he has a particularly strong interest in being able to contribute through research to improving the quality of life for people with profound disabilities, such as those with PIMD.

**Anna Duberg** (PhD), reg. physiotherapist, affiliated researcher at the School of Health Sciences at Örebro University, and research supervisor at the University Healthcare Research Center, Region Örebro County, Sweden. Her thesis from 2016 highlights how participation in dance intervention can reduce internalizing problems in youth, and this method is today implemented nationally to complement school health care. Main research interests include how physical activity, dance and movement influence health for vulnerable target groups.

## Introduction

Meeting individuals with severe disabilities who cannot actively involve themselves in health promoting activities such as dance stimulated us to develop a novel assisted intervention in water. It came to be called the Structured Water Dance Intervention (SWAN). People with profound intellectual and multiple disabilities (PIMD) live with a high level of physical and sensory impairments. Their daily life involves a great need for assistance, and they are dependent on others for care and stimulation. Moreover, due to their extensive disabilities, they often have limited access to activities in the community. We hope that the development of SWAN can counteract this, and give those with PIMD a chance to increase their participation in dance.

When dance is brought into people's lives, it can benefit health-related psychological outcomes (Koch et al., 2019) and improve wellbeing (Schwender et al., 2018; Sheppard & Broughton, 2020). Dance can also enhance feelings of trust and connectedness (Bojner Horwitz et al., 2022) and, on a societal level, offer an added dimension to how we can improve physical and mental health (World Health Organization, 2019). There is, however, a need to expand dance to different target groups (Sheppard & Broughton, 2020).

SWAN was built on the idea that a combination of hydrotherapy and dance would have synergetic effects and thus be beneficial and elevate the health and wellbeing of people with PIMD. Hydrotherapy includes a broad range of therapeutic methods that take advantage of the physical properties of water, such as temperature and pressure, and it is used to improve movement, decrease spasticity, enhance relaxation, and relieve pain. It is offered by physiotherapists at several habilitation centers in Sweden. Hydrotherapy may include both active and passive movements of the whole body, such as adjusted swimming exercises, standing and walking exercises, as well as the movements of arms and legs. Floating devices are commonly used to compensate for reduced mobility and balance. Dance has been shown to constitute a well-adapted and feasible activity that can improve psychosocial aspects and motor skills in people with neurological disorders (Bruyneel, 2019). For people with PIMD, a method called floor dance has been adopted (Hagström et al., 2011). It can be described as a couple dancing to music where one support person is dancing with a participant with PIMD who is lying on the floor. The dance movements are mainly passive and individualized to suit each participant according to the type and extent of disability.

Based on the experience of both hydrotherapy and floor dance, AF (second author) developed a water dance program for adults with PIMD together with a colleague at the Adult Rehabilitation Center in Örebro, Sweden. A pilot version was then evaluated in a Bachelor thesis (Frank, 2018), which indicated that the water dance program had beneficial effects on social interaction, mobility, pain, and mood. Because the development of the water dance program took place in a health care context, it was important not only to present preliminary results but also to provide evidence on systematic evaluations. Thus, our research group was established and included expertise in clinical and research experience of PIMD, rehabilitation, and dance studies. We

adopted SWAN to fit a research context and designed an intervention study protocol (Lundqvist et al., 2020). Since SWAN is based on a holistic view of human beings, it was important that this was reflected in the study and that the intervention adhered to the bio-psycho-social perspective (Engel, 1981). Therefore, the effects on physiological, psychological, and social health-related variables, as well as accompanying staff and relatives' experiences, cost-effectiveness, and potential for implementation in health care are investigated. So far, our research group has published a paper about the implementation aspects in disability health care from a managerial perspective (Granberg et al., 2021) and a paper about the utility of goal attainment scaling in SWAN (Matérne et al., 2021). However, the development and methodology of SWAN is yet to be thoroughly described. Therefore, the aim of this paper is to describe the development and methodology of SWAN and to reflect on the benefits, challenges, and ethical considerations concerning the practice of SWAN on persons with PIMD.

### **The SWAN method**

Including dance activities in new arenas can stimulate social sustainability as well as a shift toward inner sustainable behaviors (Bojner Horwitz et al., 2022). The SWAN method was created to fulfill the need for accessible and motivating activities in health care that could engage individuals with PIMD physically, mentally, and socially.

The combination of hydrotherapy and dance makes SWAN an example of a new intervention, which fills the gap of activities in health care and can stimulate the senses and function as a source of enjoyment and social interaction.

Movement in water enables activities that are complicated or impossible to perform on land, as the buoyancy decreases the influence of gravity (Kelly & Darrah, 2005; Lai et al., 2015). Moreover, postural support increases and the load on joints reduces (Kelly & Darrah, 2005), and being in water can open up for feelings of moving more freely (Gjesing, 2019). Dance and music gives additional “characteristics” to the water activity, such as engagement and enjoyment, which in turn can stimulate motivation to participate in interventions over time (Schroeder et al., 2017; Sheppard & Broughton, 2020).

### *The research team*

The second author (AF) who has developed SWAN is an experienced physiotherapist who has been working with the target group for over 25 years. He had several roles in the project: 1) member of the research team, 2) intervention leader who the SWAN instructors (described below) could consult, and also 3) an instructor at one of the centers.

Authors MM and LOL are researchers within the disability field, and author AD has experience from dance intervention studies. All researchers have a health care perspective and are working together at the same research center. Together, the different perspectives have contributed within the scientific frame in the development of SWAN. All authors have been active in all stages of the research project as well as in the education of SWAN instructors participating in the intervention.

▶ *Ethical considerations*

When performing activities with participants with PIMD, who have profound difficulties in communicating their opinions and wishes, ethical considerations are central. The inability of the participant to give informed consent to participation should be considered by obtaining informed consent from the participant's legal guardian. Additionally, due to the participant's communication difficulties, a person who knows the participant well (usually the personal assistant or legal guardian) is instructed to be vigilant for signs of discomfort that may signal a desire to discontinue participation and, if this is the case, they are instructed to immediately notify the SWAN instructor. The risk of discomfort or pain in this intervention is not considered higher than in other kind of activity or treatment. The present study is approved by the Regional Ethical Review Board in Uppsala, Sweden (approval number: 2019- 01156). All photos included in this paper are approved with written consent by the participants' legal guardians and by the support persons shown in the photos.

**The development of SWAN**

Physiotherapists in the adult habilitation centers in Sweden play an important role in providing support and treatment for adults with PIMD, but, unfortunately, there are few evidence-based methods for physical activities. Physiotherapist (AF) and a physiotherapy assistant, both with experience of floor dance and hydrotherapy, developed the SWAN program by combining these two methods. Prior to the development of SWAN, most of the dance sequences and movement patterns had been used and tested in individual hydrotherapy sessions by physiotherapist AF.

Principles related to the properties of water and how it affects the person physically and mentally, as described in, for example, the Halliwick method (Garcia et al., 2012), have influenced the physiotherapist AF in the treatment of individuals with PIMD.

The program was discussed and confirmed with AD (the last author, experienced in developing dance interventions for scientific investigations) regarding the dance aspects, such as diversity in musical rhythm and movement qualities, characteristics of the music, and transitions between the dance sequences. AF and AD were both physiotherapists and discussed different aspects of the delivery of the dance intervention. Because of the participants' limited mobility, the movements are passive, performed in mutual cooperation with the support person. The pilot study, which was conducted in 2017 with five persons with PIMD, showed that the program was feasible and appreciated, both by participants and support persons (Frank, 2018). Thus, no changes to the order of songs and dance movements were needed in the program per se, but since it was performed within a research context, elements of importance to the research were present, including the presence of research staff, measurements of cortisol, spasticity, and assistant's assessments, which are not relevant in the normal execution of SWAN. ▶

### ▶ The SWAN setting

The setting for the SWAN method is important due to several circumstances as described below. Based on our clinical experience of the weekly schedule of individuals with PIMD and our judgement of what their support persons will most likely adhere to, a single SWAN session is approximately 40 minutes, given once per week, and a full intervention period consists of 12 sessions (Aherne & Coughlan, 2017) (see Figure 1).

Figure 1

*Two adults with PIMD in a SWAN session in warm water with their support persons as dance partners and a SWAN instructor also in the pool. The participants wear wet vests and use flotation devices.*

(Photographer Lars-Göran Jansson)



#### *The SWAN participant*

SWAN was designed for adults with PIMD who have previous experience of hydrotherapy in a warm pool, since inexperience in this may by itself lead to stress and discomfort. Adults with severe hearing impairment who cannot hear the music might not benefit fully from SWAN since music is an important part of the holistic experience involving several senses. Moreover, it is important to ensure that adults with serious infection or ulcers do not participate for hygienic and infectious reasons. Practical considerations include that the participants must have access to a support person in the water who will act as a dance partner. They also need help in the locker room, often from two support persons.

#### *The SWAN support person*

During the dance intervention, two support persons assist: one at the pool side who assists with the floating devices and other equipment during the program, and one in the pool. Because the support person in the pool acts as a dance partner, it is important that he or she is confident in the water and will convey this sense of security to the participant when holding, moving, and talking to him or her. The support person can ▶

be someone from the accommodation, a personal assistant, or a family member. To make the participant feel secure, safe, and able to relax, it is important that there is a limited number of support persons involved throughout the intervention period. The program encourages both participants and support persons to be active and aware in the different dance sequences and to enjoy shared experiences (see Figure 2).

**Figure 2**

*A participant and her support person relax and enjoy their shared experience of the SWAN session.*

(Photographer Lars-Göran Jansson)



*The SWAN instructor*

Two SWAN instructors participate: one in the pool and one at the poolside. The instructor at the poolside has an overview of the group, guides the movements, monitors the music, and pauses between music tracks when needed. The instructor who is in the pool shows and guides the support person in how to hold and move the participant in accordance with the different themes. This instructor gives individual support as well as promoting interaction between the participants. Both instructors maintain a cheerful and encouraging attitude toward the participants and their support persons. One of the instructors is preferably a physiotherapist, with expertise in motor impairments related to different disabilities. The other SWAN instructor can be a physiotherapy assistant, a swimming instructor, or someone experienced with hydrotherapy. The physiotherapist may be the participant's regular therapist or could be new to the participant. Theoretical and practical education about different aspects of importance when conducting the intervention offered through SWAN instructor courses is provided by the research team.



▶ *Practical considerations*

When preparing for the SWAN activity, there are several logistic and environmental issues to consider. These include the presence of suitable locker rooms, shower facilities (such as a shower chair or gurney), lift or other assistive technology in the pool area, and the quality of the sound equipment.

Before the first SWAN session, a physiotherapist assesses what kind of floating devices will fulfill the individual needs for safety and movement facilitation for each participant, such as wet vests. Since the participants in most cases cannot move actively in the water, a temperature of 32–34 degrees Celsius is recommended (Becker, 2009). If the participants find it cold, they are less likely to experience relaxation and enjoyment. Depending on the size of the pool, a maximum of five participants is recommended, because there is also one support person in the water with every participant and the warm pools used for hydrotherapy are often small.

In a group activity like SWAN, participants are likely to get water splashed in their faces, which most participants will accept. Some are very spastic in their extensor muscles in the neck, and there is a risk of dipping their head backwards in the water despite the support of a collar. If a participant shows any sign of distress or sickness, the support person and the SWAN instructor are responsible for quickly assessing the situation and, if needed, taking the participant to the side or up from the pool.

**The SWAN program**

The SWAN program is structured to meet the needs of adults with PIMD from a clinical experience perspective and according to current research. The key components that we wish to highlight are experience of dance and music, adapted movements, stimulation of the senses, and interaction (see Figure 1). The dance movements, which follow the rhythm and melody of the music, are adjusted to the participant's abilities. The movements are given a form that provide the participants with the opportunity to enhance their bodily expressions. The program does not advance over the 12 sessions. On the contrary, familiarity and recognition is important for this target group. Each session consists of nine dance sequences, each with a specific movement focus and with accompanying appropriate music to match the movements and to evoke the desired mood. These nine dance sequences are presented below.

The structure furthermore takes into account our knowledge of the consequences of having PIMD. That is, the participant needs time to understand and to adjust to the situation in the pool. Simple dance movements are preferable to complex movement patterns, and repetition is preferable to frequent changes, although we wanted a variation in body position. Consequently, we selected the songs to fit dance movements that are appropriate for the participants, as well as providing the participants with just enough variation in body position, alertness, sensory stimulation, and emotional experiences. The start of the program will provide time for the participant to register where he or she is and to adjust to the water, and the end of the program includes time for relaxation and restoration. At the start and finish of the program, the participant lies ▶

▶ in the supine position with customized equipment for floating safely. In addition, this facilitates the support person to make adjustments if needed. In two of the dances, the participant is held in an upright position, sitting or standing. This is done in order for the participants to stay alert and to provide an enriched sensorimotor stimulation. In the upright position, there is a natural opportunity for an even closer and more intimate dance experience. We found that putting the dance sequences together in this order was successful in achieving a meaningful flow with a diversity of stimulation for the participants in the program.

#### *1. Zigzag dance*

The participant floats in a supine position and is pulled backward in the water by the support person in an easy-access zigzag movement. The support person observes the participant and maneuvers him or her in relation to the rest of the group. The aim of the first dance sequence is to have some time to adjust to the water, the environment, and the other group members.

#### *2. Bouncing dance*

The participant is held in an upright standing or sitting position, turned toward or away from the support person, depending on individual preferences. The focus is on jumping together. The aim is to increase engagement and arousal and moving to a strong beat where a whole-body movement is enhanced.

#### *3. Pelvis dance*

The participant is in a supine position and the support person moves the participant's pelvis sideways and in rotation with small movements. The aim is to offer relaxation from the previous sequence and to be assisted in the facilitation of mobility of the spine. By moving the pelvis rhythmically without a pause, the influence of the music is enhanced and a certain flow of movement is achieved.

#### *4. Arm dance*

The participant is in a supine position, and the support person holds the participant's arms and moves them in different directions and in different patterns. If the participant has extensive stiffness in the arms, smaller movements are recommended. The aim is to assist in facilitating mobility in the arms and shoulders. Rhythmically alternating movements are encouraged to offer a sense of disco-feeling and positive arousal.

#### *5. Leg dance*

The participant is in a supine position with his or her head close to the side of the pool. The support person moves the participant's legs quickly and slowly according to the tempo of the music. The support person at the poolside assists by holding the participant's shoulders to help stabilize the upper body, if necessary. The aim is to facilitate movement in the legs and hips and to give a sense of kicking and maybe even splashing water on the support person, which may promote playful interaction. ▶

### 6. *Circle dance*

All participants lie in the supine position and form a circle together with the support persons, preferably alternating participants and support persons. Everybody in the circle moves in the same direction. On a given cue, everybody turns to the other direction for a while to experience the water characteristics and capacity of the streams when moving together. Then, on a given cue, everybody moves toward the middle of the circle and then out again in cooperation, inward and outward like a star. The aim is primarily to promote interaction with other participants. The music is dramatic, which will facilitate engagement in the dance. However, with an accumulated increase in the intensity in the music, the instructors and support persons should be attentive to the reactions of the participants in case they show any signs of distress.

### 7. *Couple dance*

The support person holds the participant around the waist in an upright position, facing each other if possible. The dance is performed with a rocking or swaying motion from side to side. The aim is to offer a change of position once more and to enhance the sense of dancing as a couple being at the same level physically, as well as stimulating dynamic interplay through coupled moving and eye contact.

### 8. *Calm dance*

The participant is in the supine position. The support person holds one of the participant's hands firmly and slowly makes large passive movements by pushing the participant away from himself or herself and then pulling the participant back. As an alternative, the participant can lie in a forward-leaning position, leaning against the back and shoulder of the support person who is moving around slowly in the pool. The aim is to reduce tension and arousal and to stimulate mobility in the arms and back. Moving the arms slowly and rhythmically will facilitate relaxation. For those who are able to lie in the prone position, arousal will likely increase, and for some this may be a new experience evoking both feelings of amazement and pleasure.

### 9. *Relaxation*

In the final sequence, the participant is in a supine position and lightly held by the support person, who moves the participant slowly in the pool. The lights are dimmed to create a calm and relaxing atmosphere. The aim is to stimulate a sense of safety and belonging in just being close to each other when being held and moved slowly to calm music.

## **Perspectives and key components**

### *Bio-psycho-social viewpoint*

The SWAN method is designed within the bio-psycho-social perspective (Engel, 1981), which is an interdisciplinary model that looks at the interconnection between biology, psychology, and socio-environmental factors. In this model, a holistic view is adapted and it recognizes the participant as a competent dance partner.

- ▶ Adhering to the bio-psycho-social perspective, SWAN is designed to affect the participants at the biological and physiological level by stimulating the musculoskeletal system and their motor function. At the psychological level, it provides safety and trust through the support persons' care. It may decrease stress and increase enjoyment, emotional expression, awareness, and wellbeing. Alertness may increase when the accompanying music has a stronger pulse and intensity. At the social level, sharing the water dance experience with a support person as well as with others in a group setting gives rich opportunities for social interaction and close physical contact. Furthermore, heightened awareness and excitement may be experienced through an immersive playful interaction with the support person. All these levels are presumed to be intertwined and act in unison, forming a holistic experience that is channeled into wellbeing and enhanced quality of life with subsequent benefits to the participants' physical, mental, and social health.

#### *Experience of dance and music*

People with disabilities who scarcely have the opportunity to be active in land-based interventions can through aquatic therapy gain access to feelings of enjoyment (Lai et al., 2015). The playful and non-weight-bearing exercises in water can reduce focus on the difficulties they have on land, e.g., that they can seldom manage to stay in an upright position by themselves. By performing the dance in water, the facilitating properties of the water, together with the support from a support person, can assist the participant in experiencing the dance more fully. The support person's action can be crucial for the participant's experience. A support person unaccustomed to pool activities and the facilitating characteristics of water may not support the participant properly.

The influence of the music is as important for persons with PIMD as for anybody else. Bodily movements and sensations have influence on emotional reactions, and as Fuchs and Koch (2014) suggest, "the body functions as a medium of emotional perception: it colors or charges self-experience and the environment" (Fuchs & Koch, 2014, p. 1). Although the participants in SWAN have severe intellectual disability and limited emotional awareness, this circular interaction is evident in SWAN as the dance and music amplify a spectrum of both body and emotional expressions.

Due to the participants' communicative disability, there are difficulties when trying to measure and communicate their own experiences from SWAN. However, expressions can be a new way for the support person to get to know the SWAN participant on a deeper level and for the participant to gain new bodily insights and "expand the emotional repertoire" as described by Gomes et al. (2021, p. 17).

Moreover, in SWAN, the support persons learn how the participant receives the different sequences and themes, and what parts of the program are the most stimulating, most activating, and most calming for him or her during different days. Thus, bringing dance and music into everyday life with a weekly intervention is of multidimensional value for both the participant and the support person.

▶ *Adapted movements*

Movements of the whole body are stimulated during the program. The movements are mostly passive because of the individuals' severe motor impairments. The participants both lie in the supine position and are held in the upright position when dancing. The offload of the water decreases the weight of the participant, and thus the ability to hold and carry the participant is improved, which expands the possibilities to dance as a couple in ways that would not be possible on land.

Two purposes of moving the participant's body in different ways in warm water are to maintain or increase the gross motor function (Lai et al., 2015) and to prevent further stiffness in the joints (Becker, 2009). When moving the participant's body, the support person can also use the resistance that the water offers and the drag force to facilitate movements (Becker, 2009; Kutzner et al., 2017). For participants who only have a very limited ability to move actively, the dance may promote active movements because of the stimulating environment and the encouragement from the support person.

*Stimulation of the senses*

Another purpose of the water dance is to offer a multisensory experience through visual, auditory, tactile, vestibular, and proprioceptive stimulation. The music is intended to guide the dance and serve as an inspiration for engagement, as well as for facilitating relaxation. The tactile experience is provided through the handling and adaptable touch of the support persons, and also through the warm water moving along the participants' bodies (Gjesing, 2019). Being in an upright position and moving together will stimulate the vestibular system (see Figure 3). Vestibular stimulation affects posture and muscle tone in the trunk (Nandi & Luxon, 2008). Jumping with the help of the support person intensifies the vestibular stimulation and provides stimulation of the proprioceptive sense. Proprioception is moreover stimulated by all movements, especially when the water offers resistance to the arms and legs.

▶ **Figure 3**

*An adult with PIMD being held in an upright position by his support person to stimulate the vestibular system. His head is supported by a collar. (Photographer Lars-Göran Jansson)*



#### *Interaction*

The central principles in SWAN also concern the interplay with the support person, where health is perceived as an intrinsic part of the social context (Chambers & Thompson, 2009). During the different sequences, there is a constant interaction between the participant and the support person. Interaction is facilitated by the physical closeness and the fact that they are wearing swimsuits, which gives the participants an increased possibility for skin-to-skin contact. This tactile stimulation is a basic foundation for communication.

Throughout the SWAN program, interactions between a person with PIMD and the support person are established as the support person compensates for the individual's disability. Through this closeness and intentional communication with passive guiding, eye contact, facial expressions, and voice, this could be understood as a dynamic interplay, a coupling of two embodied subjects, described by Fuchs and De Jaeger (2009) as "mutual incorporation" – an intersubjective dyadic bodily state. Their body experience broadens as they incorporate the perceived body of the other and the participant's body scheme expands through the support person's gentle steering in the water.

Facing away from the support person, the participant has the chance to interact with other participants, for example in sequence number 6 when the group is formed into ▶

- ▶ a circle. Supported rest is included at the end of the program to promote relaxation, which is a time for mutual calm awareness and shared experienced harmonization with the music.

### **Reflections**

To our knowledge, this is the first description of a dance activity in water specifically designed for people with PIMD. More results from this multicenter study will be presented in coming articles, and more lessons will be learnt regarding future dissemination and implementation of the method. However, the knowledge we have acquired to this date is that the intervention has been well received and appreciated at the centers, by the support persons, the instructors, and it seems feasible for the target group. The valuable non-verbal communication and unique situations that often arise in SWAN are important reasons for this. Although it requires a lot of resources, the instructors of SWAN considered the method to be successful. During interviews with instructors and support persons within the research project, one of the instructors stated:

This has really been a boost for her. She's been much happier and full of anticipation. She doesn't talk, but she talks in her own way, she has certain sounds. One effect that I hadn't expected that has just been a real bonus effect and just fun is that she is kind of humming and singing along to certain songs in her own way. Like I said, she can't, she doesn't have the words, but you hear she's trying and that's what's so wonderful. (quote from an instructor)

This participant humming and singing is a demonstration of how she is enjoying the activity and is mentally present in the moment. The quotation describes how the dance gave rise to a newfound energizing experience where the music contributed with an extra dimension of arousal and enjoyment.

As the support persons are well familiar with the participants' own language and expressions, they can identify when the participants are fully "absorbed" in the dance and the happiness is anchored in bodily movements and in sounds of joy.

Another quotation shows an example from a support person that expressed feelings of self-esteem and confidence during SWAN in interaction with the participant:

Yes, "New York" [the song, couple dance no 7] was amazing when you get upright and he probably felt like a prince and I felt like the princess. Because it was unbelievable, that smile, and although he is not an expressive guy, he was so happy and made sounds of joy. I almost felt like crying because it was such a cool experience. (quote from a support person)

This quotation illustrates a straightforward verbal expression of enjoyment that is mirrored through the support persons' experience. Their social interaction process as a couple in the upright position gives space for new playful inter-subjective experience, and the rhythmic and inviting music contributes to the emotional engagement. Related to the perspective that the lived body always transcends itself and partly merges with the environment (Fuchs & De Jaegher, 2009), it is possible that the weightless characteristics of water enhanced a feeling of freedom of movement (Bundy & Lane, 2019).

Research about people with PIMD shows that relaxation sessions can be beneficial both physically and emotionally (Woods, 2014). Every SWAN session ends with a dance focusing on relaxation. Moreover, throughout the session, the support person gently touches the participant to facilitate relaxation. Predictability is another important factor for adults with PIMD, as they like to know what will happen next, and they are comfortable when nothing unforeseen happens (Wilder & Granlund, 2015). For this reason, the SWAN program has a predictable structure. The music tracks, movements, and dance sequences are repeated every session. This creates a safe and trusting environment for participants to develop and bond with their support persons, which also facilitates relaxation.

Another significant feature of dancing as a couple is that both partners move together. The support person has a vital role as a dance partner by performing the dance in a way that will assist the participant in experiencing the dance sequence in the intended way. The support person's feeling in the dance will be conveyed to the individual with PIMD, which establishes a foundation for shared experience. This shared experience could give the person with PIMD self-confidence and action as a competent dance partner. In several observed occasions, the support person on the poolside also confirmed the person with PIMD as a dance partner.

Studies show that social relationship and interactions affect several health outcomes such as mental health, physical health, and mortality risk in a general population (Cacioppo et al., 2000; Umberson & Montez, 2010). Social interaction may also influence the quality of life and development positively (Nijs & Maes, 2014). However, spontaneous interaction between peers with PIMD is difficult because of their communication problems, and the interaction thus has to be facilitated by a support person. Under such conditions where, for example, support persons keep individuals with PIMD company during the whole intervention time period, it is likely that a number of social interactions will arise (Kamstra et al., 2019). Moreover, during the 40-minute sessions, several opportunities exist for interaction between the participants. SWAN encourages peer and group interaction, as in the circle dance where participants can touch others' hands or arms, which is in line with studies showing that a group context is important for people with PIMD, and that many of them are socially interested in others in group activities (Nijs et al., 2016).

A challenge in this method is how to take advantage of the support person's engagement and knowledge about the method. The research team provided training for the instructors and assumed that the information would reach the support persons. However, this was not always the case, and in future implementation we recommend inclusion of the support persons at an early stage in the dissemination of information and training. Another challenge concerning the support person is to limit the number of persons taking part in SWAN. This profession often has a high staff turnover, and the 24 hour schedule is also an obstacle to having the same support person in the pool every session. Access to a warm water pool equipped with locker rooms is a prerequisite for



- ▶ SWAN. In Sweden, it can be difficult to gain access to these pools due to the priority of other target groups and organized activities.

Working with people with PIMD is a challenge due to their communicative impairments, and therefore the ethical considerations concerning what they feel and experience have to be interpreted by the support person. Also, the instructors and the research team have to be aware of the participants' expressions.

#### *Further research*

A broader understanding is needed of how dance influences wellbeing in people with PIMD. Further planned studies of outcomes from participation in the SWAN program, described in a study protocol (Lundqvist et al., 2020), will add knowledge as to what extent the SWAN method offers health benefits for people with PIMD. So far, the results show that it is important to customize physical activity for people with PIMD. Following the evaluation of SWAN, the next step is to initiate an implementation process of the method in health care and possibly in other contexts. To facilitate the participation of people with PIMD in SWAN, the possibilities and limitations of implementing SWAN in different environments and for different target groups need to be investigated (Granberg et al., 2021), as well as to what extent this kind of intervention can alleviate the work load. The effects of the SWAN program could also be investigated in other disability groups with restricted movement, and future studies should include larger sample sizes and also younger age groups.

#### **Conclusion**

Structured Water Dance Intervention (SWAN) was developed for people with PIMD in order to increase the availability of a health-promoting enjoyable activity, such as dance. With key components that focus on the experience of dance and music, adapted movements, stimulation of the senses, and interaction, in a shared experience including enjoyment and emotional expression, this dance intervention supports values that are rarely found in activities for people with PIMD. The SWAN intervention can provide a viable avenue for promoting dance in disability health care settings, and if implemented as a complementary treatment, it can offer an added dimension to the ongoing work of improving wellbeing for people with PIMD. To facilitate people with PIMD to participate in dance, we call for an increased awareness of their needs and what adjustments are required, both in the habilitation services and in the community.

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The authors report no potential conflict of interest.

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