

GROUP TRAINING IN A POOL CAUSES RIPPLES ON THE WATER: EXPERIENCES BY PERSONS WITH LATE EFFECTS OF POLIO

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The purpose of the present qualitative study was to describe how persons with late effects of polio experienced dynamic exercise in water in a group. Semi-structured interviews with 15 participants were carried out and analysed according to the phenomenographic approach. The results showed great variation in the way the participants experienced the group training. Fourteen different categories appeared focusing on three different aspects: the self, the training situation and the world around. It appears that the experienced effect of group training in water goes beyond improving physical functions.

Key words: dynamic exercises in water, phenomenography, physiotherapy, post-polio syndrome, participant experiences.

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INTRODUCTION

Poliomyelitis was for a long time a major health problem, and the last widespread epidemic occurred in Sweden in 1953. The disease has disappeared as a major public health risk in Western countries but new health problems have been reported in individuals with a history of acute poliomyelitis (1–4). These new problems, which are related to the earlier disease and occur more than 20 years after the acute illness, are, when they fulfil certain criteria, described as late effects of polio or post-polio syndrome (PPS) (5). The majority of individuals with late effects of polio demonstrate similar symptoms and the most common ones are new or increased muscle weakness, fatigue, muscle and joint pain (6, 7). The impact of this on activity is mainly related to mobility and on physical demands in the home or at work (8, 9). The aetiology behind these new symptoms is not fully understood and a number of aetiologies have been proposed. One favoured by a number of authors is loss of enlarged motor units due to overuse or premature ageing; another is disuse of muscles (10–12).

The aim of physical therapy after the acute phase was to

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regain lost strength, which meant that physical activity was encouraged and almost compulsory programmes, including intensive strengthening exercises, were prescribed (13). At this stage, a fundamental attitude was developed among polio survivors in which disability and signs of disability were minimized and independence was maximized (14). However, the philosophy of treatment in the management of individuals with late effects of polio is quite the contrary to what people learned in early rehabilitation and applied to their lives (15). There is concern that overloading muscles with new or increased muscle weakness might lead to a further decrease in function (16), and although exercise has been shown to improve muscle strength and improve fitness (17, 18), it must be prescribed individually and carefully evaluated. Individuals are taught to pay attention to their perception of exertion and self-monitor their fatigue, both when exercising and during daily activities, to avoid overuse problems (15). This is a challenge for the physiotherapist who has to persuade the individual to adapt his or her level of physical activity in daily life so that symptoms such as fatigue and pain are not present. On the other hand, lack of physical activity might lead to disuse symptoms (16).

Dynamic exercises in heated water would be an appropriate way of exercising for individuals with symptoms such as late effects of polio. The heat makes it more comfortable to exercise and the water both reduces the effects of weight bearing and offers resistance so that the individual can choose how much to load his muscles (16). A group training programme designed for individuals with late effects of polio, led by a physiotherapist and held in a special heated pool, was offered weekly after work at the Department of Rehabilitation Medicine in Göteborg. The group training was part of a project at the Sahlgrenska University Hospital with the aim of starting up a multidisciplinary polio clinic including a post-polio school. In a follow-up study of the pool training, participants were found to have a lower heart rate at submaximal work load on a bicycle ergometer test, as well as less distress from pain and a feeling of increased well-being (19). No studies on how such physical training is experienced by the participants are, however, available. Such experiences are valuable in rehabilitation, in accordance with “the variation theory” of learning (20). Taking people’s own experiences and needs into consideration might improve the rehabilitation and make it more effective. In a study of patients who had had myocardial infarction it was shown that physical exercise in a group was experienced as positive for the health and an important part of life. It was experienced important that the training was adapted

Table I. Subject demographic information

Gender	
Men	6
Women	9
Age, years (mean, range)	55 (46–66)
Stable phase, years (mean, SD)	35 (8)
Post-polio syndrome	11
Affected lower limb	15
Affected upper limb	5
Working status	
Full time employment	7
Part time employment	3
Student	1
Early retirement pension	2
Old-age pension	2

and led by professionals to create safety (21). The aim of the present interview study is to describe how dynamic exercise in water in a group is experienced by individuals with late effects of polio.

METHODS

Participants

The subjects were strategically chosen from those who have participated in the water-training described earlier in this paper regularly during the past 3 years. Differences in gender, age, the degree of occupation and the degree of functional impairment were reflected in the selection of subjects. They were required to be Swedish speaking. All had visited the polio clinic and some of them had attended the post-polio school. The group consisted of 15 individuals, 6 men and 9 women (Table I). The mean age was 55 years with a range of 46–66 years and the average stable phase after the acute phase had lasted approximately for 35 years (SD \pm 8). Eleven individuals fulfilled the criteria for PPS and the remaining 4 had late effects of polio but without increased experience of muscle weakness. Seven individuals were working full time, 3 part-time, 1 was studying at the university, 2 were in early retirement and 2 were old-age pensioners. All had EMG-verified neuropathic changes in their lower extremities, but were walkers with or without assistive devices. The average maximal walking speed was 1.26 m/s with a range of 0.87 to 1.67 indicating a great variation.

The study was approved by the Ethics Committee of the Faculty of Medicine, Göteborg University. The subjects were informed about the study both orally and in writing by the main researcher. All who were asked agreed to participate.

Training programme

The subjects were introduced to the group training in water after having visited the polio clinic. The programme, accompanied by music, lasted for 45 minutes and was designed to train general physical fitness with an emphasis on endurance activities. The participants were told to pace the intensity at a level where fatigue did not occur during or after the training session. The training sessions also gave the participants the opportunity to obtain informal information concerning questions and problems related to late effects of polio. At the time of the interviews the participants had been part of the group for 3–4 years.

Data collection

Semi-structured interviews were carried out by two physical therapists with experience of conducting qualitative interviews and familiar with late effects of polio but not involved in the pool-training programme. The subjects were interviewed separately in conjunction with a training session, and each interview lasted about 20–45 minutes, was tape-recorded and transcribed verbatim. The interview was exploratory within the phenomenon and the following question was used to start up the

interview: If you told someone about your water exercises, what would you say? Examples of other questions were: What do you get out of pool training? Has the pool training changed anything? If so, what has caused the change? Do you do anything now in a different way than before you started going to pool training? Do you see yourself or your surroundings in a different way now than before the pool training? What sort of training would you do if you were allowed to choose yourself?

Data analysis

The interviews were analysed according to the phenomenographic approach. Phenomenography was developed in the early 1970s (22). It has diversified in the years since then (20), but its main characteristic still is that a qualitative variation exists in how people experience phenomena, and that this variation is due to people's different experiences and relations to the world around them. The research interest is to reveal these variations in the way a phenomenon is experienced and describe them in categories (categories of description), in other words, to describe the world as others see it (23). From a phenomenographic perspective, it is important to find out people's different experiences and use them in learning situations in school as well as within health care and medical care (24).

The categorization was carried out by firstly becoming familiar with the material by reading it through several times and comparing the interviews with each other. Entities or statements were put together in domains according to similarities. The differently coded entities within each domain were analysed and compared with each other to form the central idea of a category and to define it in relation to other categories. Gradually, a pattern of different categories within different domains or aspects of experiencing group training in a pool was identified. The categories of description and the aspects are thus the result of a discovery and they are not made up in advance.

The results were validated using dialogical intersubjectivity, i.e. the interviews were read separately by the two authors, and the material was discussed until agreement was reached (25).

RESULTS

Fourteen different categories appeared, focusing on three different aspects of exercising in water: the self, the training situation and the world around. The self includes the body, the mind or the body related to the mind. The training situation includes the group, the water or the leader and the world around includes situations outside the training situation. Table II displays the 14 different categories and the three aspects being focused on. Table II also illustrates the allocation of experiences among the interviewees giving an individual profile.

All of the categories have a positive keynote, even though they are based on a negative experience. The following is a description of the different categories, exemplified with excerpts from the interviews.

The self

Your awareness of your physical capacity increases. This category has the body in focus. Its character is that the training makes participants who express this category aware of their own physical capacity. They learn about the body and its limitations. This can mean discovering that they are capable of more than they expected, but it can also mean that they are actually worse than they had thought earlier. One participant put it:

I got started thanks to the polio clinic, and I found that I was considerably worse than I'd actually realized. I notice this when I'm in the pool and I have to stretch out my arm in

Table II. Categories describing experiences of exercising in water, and aspects being focused on. The allocation of the experiences among the interviewees are given.

Category	Interview subject															Total number of interview subjects
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<i>The self</i>																
Your awareness of your physical capacity increases	X		X	X		X			X			X				6
You feel better	X	X	X		X	X	X	X	X	X			X	X	X	13
Greater self-esteem				X			X	X								3
Your physical capacity is maintained or improves	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
The experience of pain is positively affected					X	X	X			X	X	X		X	X	8
<i>The training situation</i>																
The group as a social resource	X	X	X	X	X		X	X	X	X	X	X	X	X		13
Experiences are exchanged and you learn from each other	X		X	X		X		X	X	X	X	X				9
Together with others in the same situation you feel normal		X					X		X	X				X	X	6
In the water you are in control	X			X	X	X	X			X	X		X		X	9
The water gives a feeling of freedom		X	X					X	X							4
A competent leader creates confidence	X	X			X	X	X			X		X		X		8
<i>The world around</i>																
The training affects everyday life			X	X			X	X		X						5
Improved planning to spare yourself in everyday life				X	X	X		X				X				5
The ability to talk about your situation is extended to others outside the group				X				X				X				3

certain exercises and legs in others. So I discovered that I could do less than I was actually aware of earlier.

The awareness of having a worse physical capacity than expected is not expressed in negative terms, but is regarded as a verification and motivates going on training. One participant expressed the following:

I think it's more fun to exercise now.

She said this in spite of the fact that, thanks to the water training, she had also become more aware of her difficulties in performing some movements and of not being as strong in her legs as she had believed earlier.

You feel better. In this category the focus is on the mind. Participants in this category feel that mental experience is the primary characteristic. General wellbeing is understood as being positively influenced by the training as is mood. Those in this category become happy, elated and feel satisfied, which is illustrated in the following dialogue:

Interviewee: I feel relaxed when I've trained in the water, and then it's probably the melatonin or whatever it is that gets going and you become elated and happy. A feeling of mental wellbeing, too.

Interviewer: Mental, what do you mean?

Interviewee: Well, I feel in a good mood.

The sensation of feeling better and more at ease is experienced as something positive in itself. One participant expressed the following:

I don't think that it's changed my life in any way except that you feel better and that is a big thing.

Greater self-esteem. In this category too, focus is on the mind. Taking part in the training provides a chance to do something to actively influence the situation. Participating in and having the capacity to accomplish the training, can be a source of pride, which seems to boost the self-esteem of those who express this category, as shown in the following excerpt:

Well, I think this is great and hope we can continue. I think that it means a lot. Because I think that people who have post-polio feel that they can't influence their situation in any way. They are only told that they may get worse. So I think many of them get depressed, maybe sit at home and isolate themselves and think that there's no point in doing anything. Here you do something anyway to try and improve your situation.

Your physical capacity is maintained or improves. This category has the body in relation to the mind in focus. Those who express this category describe training in water as influencing their physical capacity in a positive way. They say that their bodies feel more flexible and their balance is improved, which can mean that they feel steadier. Effects on muscle function were described with words, such as "your muscles are kept up and are prevented from becoming weaker". They experience that their physical fitness has improved, which means that it is possible to manage to do more in daily life. One of the interviewees expressed the following:

After the first term, I remember I had a considerably better sense of balance, had a greater sense of wellbeing, more strength, improved fitness and greater endurance. I think it is

important for me to have this type of training. I cannot see that there is any alternative. The best part is probably that I actually feel that I'm in better balance.

Secondary to the physical effects, this category also includes mental effects. A break in the training during the summer shows both of these effects being experienced more distinctly:

Interviewee: Of course, I notice that I get much stiffer in the summer when I don't have any pool training. Interviewer: Is there anything else you notice in the summer?

Interviewee: No, but I think if you feel more flexible, you're in a better frame of mind altogether. You don't get so depressed when you realize that you can manage to do this and that.

The experience of pain is positively affected. This category also has the body related to the mind in focus and those who express this category describe the experience that training in water decreases the perception of pain. In this category, too, the description is followed by a subordinate clause, describing an experience of mental character. This experience is most evident when there is a break from training and the pain returns. The decreased feeling of pain led to a better quality of sleep for some and a better mood for others. One participant put it:

Then, at that stage, when I started with the training four years ago I had been in constant pain for some years. I could hardly sleep at night and for some reason it has more or less disappeared. The immediate decrease in the pain during the training itself is very important as it makes it possible to exercise.

The training situation

The group as a social resource. The group is the focus of those who express this and the following two categories. Participants who express this category experience the group as a forum where friendship and social relationships are developed. Meeting people in the same situation who care about each other, encourage, support and stimulate one another is seen as very important. These participants look forward to the training and always go there with a happy feeling. As one person put it:

This is a hobby, therapy and a chance to meet buddies.

The training situation provides a contact that goes on outside the training situation:

Well, for one thing, I think some come earlier than they need to and sit and talk to each other, for another, we have a nice talk in the changing room and not everyone is in a great hurry afterwards. We care about each other, ask each other "how are you?" and "how's the job going?" and "how's the boat?" or what have you. So it's a form of social fellowship. And now and then some of us go out and eat once or twice a term. That's good, I think.

Experiences are exchanged and you learn from each other. The group is not just seen as a social resource, but also as a source of

information. Its members can give tips and advice to each other and learn from the others' experiences. Identifying with others is a positive experience. One result of this is that participants who express this category more easily accept the use of assistive devices and gain an insight into the positive aspects of trying to adapt to the situation at hand. Being together with others with PPS is regarded as instructive but also means that participants become more aware of their own situation, or as one person put it:

Well, we exchange experiences, as I said earlier. There's a chap who does a lot with his boat and I said to him take an office chair and sit down when you peel potatoes. And he did. If you open the cupboard door and put your feet inside, you sit there and rest your legs and it's things like that we help each other with. It's things that other people talk about, how you do this and that. People think of things. That's what the group is for, isn't it? There's a lot, of course, that you can help with. That somebody knows and that another hasn't thought of. There's a lot like that.

Together with others in the same situation you feel normal. Training with "healthy people" makes participants who express this category feel abnormal. This includes both their bodily appearance and their inability to participate in some aspects of training. In this group they feel less different and more normal. Having a body that looks different or not being able to do some of the exercises is not seen as strange. One participant put it like this:

No, I can't go to an ordinary gym or anything like that with normal healthy people that don't have any problems with injuries. I can't keep up. I feel: No, I don't dare to, I can't. I have to be in a group that has the same problems and where they understand each other. You don't make such high demands on yourself in this group. Because everyone is weak and has an injury and no one looks at me when I can't do something. But if you are with the "healthy", then you think in another way.

In the water you are in control. This and the next category focus on the properties of the water. Participants who express this category feel that training in water gives them the chance to adapt the training to their own capacity and to do what they themselves can manage. They can work as hard as they want to and each participant can control the intensity of his or her own movements. The risk of getting carried away by the others is much less than in a group "on land". This is illustrated by the two following excerpts:

In the water you can decide yourself all the time how much force to put behind each movement and how quickly you want to do it if you want to increase the resistance. You can vary the training much more in the water than you can with equipment.

The very fact that you can plan it yourself, how much you exert yourself. It's much easier, I think, in the water than on

land. Well, it depends how you're feeling and on how I am the day we do it.

The water gives a feeling of freedom. Those who express this category say that being better physically able to master their bodies gives them a feeling of freedom. The properties of the heated water allow participants to carry out movements and exercises that would have been impossible on land. One of the interviewees said:

Well, it's the best training I can get. It's very positive, the warm water and meeting people who've had polio, plus that there's a feeling of freedom, it is like that for me. Because I can do everything in the water that I can't do on land.

A competent leader creates confidence. In this category the importance of the group leader is pointed out. The leader's understanding of post-polio problems is considered to be of great importance. Participants in this category feel safe knowing that the programme has been adapted to their needs, that it is well-balanced, and that there is no risk of training in the wrong way or of injuring yourself as a result of over-exertion. This confidence in the leader also means that they dare to "have a go at it" and exert themselves in some of the exercises when stimulated to do so. One participant expressed the following:

I know that she knows what she is doing and that makes all the difference. If you were to go to an ordinary gym, then it wouldn't be specially adapted and then there would maybe be a risk that you do things wrongly, overdo it.

The world around

The training affects everyday life. This and the following two categories have their focus on the world around. Those who express this category say that the training makes everyday life easier and that they act in a better way every day. They are both able to work and to cope with family relationships as shown in the following excerpt:

Well, it means that I can still work full-time and be with my family in spite of having a handicap.

Improved planning to spare yourself in everyday life. Participants who express this category feel that what they learn from the pool training, both from the training itself and from the group, allows them to plan their daily lives better. They learn to "think in advance" to spare themselves and not be caught up in activities and environments that might be too strenuous. One of the interviewees put it:

OK it was time to change tyres today and I took an hour to do it. Sat on a stool outside the garage and took one wheel at a time, took a pause and then planned the next wheel so I could work in the right way. So you plan what you do a lot to tackle it in the easiest way possible.

The ability to talk about your situation is extended to others outside the group. In this category, participants find that what

they are going through and learning in the group is extended to situations outside the group, in relations with others in other environments. It can be difficult to talk about problems with individuals who do not have post-polio. After talking repeatedly and at length with each other in the group, these participants find it easier and more natural to talk about problems to others outside the group as well. This is illustrated by the following excerpt:

It makes you more open to talking more about polio too. As you're used to talking here about polio with the others, it's natural to talk to people who haven't had it as well. And for me it hardly shows, so people find it a little difficult to realize it.

Some participants find that when they talk to others outside the group, they sometimes can give them tips and recommendations, which they have learned themselves:

I sit down and maybe talk to people. I might share some opinions and then maybe I give them a few tips that I've learned in this training.

Quantification

The quantification of the material in Table II, showed that the interviewees were more represented in the categories in the aspects the self and the training situation, than in the aspect the world around. The experiences were distributed widely among the interviewees and no specific patterns were prominent.

DISCUSSION

The results of this study reflect a considerable variation in the way the participants experience group training in water. The training was clearly experienced not only physically but also mentally. Its effects were even apparent in new situations outside the training situation. The results reflect experiences from this group and maybe the categories would have been modified if the group had been put together in a different way. Some of the categories were similar to those in the study of patients with myocardial infarction (20); in both studies the physical exercise was good for the individual and it was seen as important to have a competent leader.

To achieve a deeper understanding of the experienced effects of training in water, than can be attained with the use of, for example, questionnaires, a qualitative method was used. Phenomenography aims to reveal different experiences of a phenomenon by talking about it. Säljö (26) states that it is not certain that talking reflects people's experiences. He argues that what is categorized in phenomenography could be "ways of talking" rather than experiences. Grundén & Ottosson (27) however, point out that it is reasonable to believe that talking reflects experiences. The knowledge derived from the present study is unlikely to apply to the polio group alone, and may be relevant to other groups of individuals with disabilities, especially reflecting problems of the neuro-muscular system.

All of those interviewed experienced concrete physical improvements and almost all (13/15) expressed effects on their general well-being. These experiences are in correspondence to an earlier quantitative study (19). The training was regarded as positive and filled with pleasure. Taking part in this type of training can make participants feel in charge of the training situation. This is in contrast to other descriptions of training in the early stages of polio as being hard, painful and compulsory (13).

The training meant that the participants' awareness of their own physical capacity increased. Some realized that their physical capacity was better than they had thought, while others discovered that it was worse. The latter circumstance was not expressed in negative terms but provided these individuals with motivation. It did not deprive them of their pleasure in moving. Perhaps it confirmed what they had felt intuitively but had been uncertain about. Such confirmation might make it easier to cope and to be more honest in communication about what they are able or unable to do.

Moreover, there was a feeling of confidence when training in the group. Knowing that the training was adapted to the needs and should not affect them negatively meant that the participants could trust the person responsible for the training. Hence, the professional knowledge of the staff is of great importance when an activity such as this is offered.

The group appeared to be of great importance not only as a social phenomenon but also as a learning resource. This is in accordance to the results in the study by Larsson et al. (28), who evaluated the experiences of those who attended a post-polio school. Information in the form of informal discussions within the group may be better received than as traditional presentations. Despite the fact that it was a part of the group activity, the participants in this study seldom referred to what the leader had taught or had tipped them about, but more often to what they had learnt from the others in the group. Assistive devices and recommendations of assistive working methods were considerably easier to accept if someone in the group spoke favourably of them. The process of adapting to a new strategy or accepting the use of assistive devices may, however, have started before being introduced into the group training, for instance when visiting the polio clinic or the post-polio school. A group activity like this that lasts for a considerable time and is experienced as filled with joy and provides an opportunity for social interaction between the participants, is an excellent forum to keep this process going. This is supported by Thorén Jönsson (29) who pointed out that support from others as well as time are required in order to change or adapt a new strategy. A group that functions well can also serve as a stimulus to keep on training. The positive atmosphere that is built up in the group over a period is something that participants do not want to do without.

How we perceive ourselves depends among other things, on how we perceive our own body (30). In a qualitative study of people with late effects of polio aimed at describing factors influencing the development of everyday strategies, it was found that some individuals had developed a negative body image and

a negative opinion of their physical capacity (31). In the present study it was found that the feeling of being normal appeared when participants were together with others in the same situation in spite of their knowledge of their disabilities. The training in water also gave a feeling of freedom, a moment when you could master and control your body in accordance with your own capacity, needs and wishes. "We are our bodies" declares Merleau-Ponty (32), which means that if you can help people to gain a positive image of themselves by a positive experience of his or her body, their relationship to the world around will be affected in a positive manner. What appeared to be just physical rehabilitation has turned out in this study to affect both self-confidence and sociality, and needs to be taken into consideration in connection with rehabilitation. However, more research is needed to substantiate this knowledge.

The present study shows that the effect of group training in water goes beyond improving physical functions. By exercising, participants get to know their bodies better and develop a better attitude to them and thereby to themselves. This in turn might help them to relate to the community in a different and more appropriate way.

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