Physiotherapy for post-polio patients as part of an interdisciplinary rehabilitation program

Merete Bertelsen, physiotherapist, Denmark
Specialized hospital for polio and accident patients

Out patient clinic for:
Polio patients
Spinal Cord Injury patients
Multi trauma patients

Patients from other parts of the country and from abroad can stay for 3 weeks
Modern rehabilitation builds on collaboration between professionals and the patient/relatives.

- Doctors
- Physiotherapist
- Occupational therapist
- Polio Survivor/relative
- Psychologist
- Social worker
- Dietician
- Orthotist
- Local municipality
Patient flow

Doctor’s assessment

Interdisciplinary interview with patient

Parallel treatment and counselling

Physiotherapy  Occupational therapy  Social worker  Psychologist  Orthotist  Dietician

Cooperation along the way between team members

Evaluation conference with patient
ICF model

International Classification of Functioning, Disability and Health, ICF)
# Rehabilitation plan

<table>
<thead>
<tr>
<th>Name:</th>
<th>Date:</th>
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<tbody>
<tr>
<td></td>
<td>Date for evaluation:</td>
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<table>
<thead>
<tr>
<th>Team members:</th>
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<table>
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<tr>
<th>Contact person:</th>
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<table>
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<tr>
<th>Description of patient’s daily life including functional limitations:</th>
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<tr>
<th>What would the patient like to be able to do/participate in?</th>
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<tr>
<th>Long term goal:</th>
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<th>Short term goal:</th>
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<th>Action plan:</th>
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Patient flow

- Doctor’s assessment
- Interdisciplinary interview with patient
- Parallel treatment and counselling
- Cooperation along the way between team members
- Evaluation conference with patient

Physiotherapy, Occupational therapy, Social worker, Psychologist, Orthotist, Dietician
Physiotherapy
Recording patient’s medical history

- Acute and stable phase of polio
- Muscle weakness now
- Fatigue and pain
- Functional limitations
- Assistive technology now and earlier in life
- Mobility and fall episodes
- Respiration, swallowing
- Voiding
- Life style (nutrition/activity level)
- Comorbidity
- Resources and limitations in activity and participation
Immigrants with polio

Leg length discrepancy
Contractures
Psychological problems

Handling small children
Vocational problems
Accessibility at school or work
Language problems
Cultural differences
# Diary of activities

<table>
<thead>
<tr>
<th>Activity:</th>
<th>Pain:</th>
<th>Fatigue:</th>
<th>Comments:</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>0 - 10</td>
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</table>
MFI-20
Multidimensional Fatigue Inventory

A 20-item self-report instrument designed to measure fatigue

- General Fatigue
- Physical Fatigue
- Mental Fatigue
- Reduced Motivation
- Reduced Activity

Reference values are available
Physical examination

– Analysis of posture, gait and seating (check callipers)
– Muscle problems (weakness, fatigue, tension, contracture)
– Joint problems (arthrosis, overuse problems, instability etc.)
– Respiration (Vital Capacity, thorax deformity and mobility)
– Neurologic examination (sensibility, reflexes, tonus)
– BMI = Weight in kg/height x height in meter
– Analysis of pain issues
Pain types

**Post polio pain:** Pain in muscles affected by polio
   Aching, cramps, fasciculations

**Overuse pain:** Pain caused by overuse
   Pain in soft tissue, muscles, tendons, bursa and ligaments

**Biomechanical pain**
   Degenerative joint disease, nerve compression, bad posture, low back pain

Source: Anne Gawne, MD
Pain assessment

- VAS Visual Analog Scale
- NRS Numeric Ranking Scale
- PDI Pain Disability Index
- Drawing
Tests

Function:  
Timed Stands test  
Timed Up and Go

Respiration:  
Vital capacity

Muscle strength:  
Manuel muscle testing

Balance:  
Bergs balance test  
Figure of eight test  
Tandem test

Walking:  
6 min. walk test  
10 meter walk test  
Distance test

Cardio respiratory:  
Aastrands 6 minute cycling test  
Borg 15 test
Clinical reasoning

- What are the reasons for limitations and problems?
- What is the patient’s opinion and experiences?
- What can be done?
- Intervention plan is made in cooperation with the patient (and relatives)
Polio education

- What is polio and PPS?
- Exercising principles
- Assistive technologies
- Psychological reactions
- Coping/energy management
- Exchange of experience
Physiotherapy intervention

Energy management

Exercise

Pain relief
Energy management

Change of work situation
Change of daily tasks at home
Prioritize tasks
Pacing / take breaks
Use assistive technologies
Use callipers and bandages
Evaluation af seating

Measuring pressure in seating
Pain treatment

- Exercising/water exercising
- Acupuncture
- Laser therapy
- TNS
- Massage
- Heat
- Relaxation techniques
- Energy conservation/rest
- Bandages
- Technical aids
- Weight loss
- Medication
- Surgery
- Etc.
Exercise

- Good or bad?
- Use it or lose it
- Conserve it to preserve it
- It depends......
What do the European guidelines for post polio syndrome say about exercise?

Supervised muscular training, is a safe and effective way to prevent further decline of muscle and can even reduce symptoms of muscular fatigue, muscle weakness, and pain.

Precautions to avoid muscular overuse should be taken with intermittent breaks, periods of rest between series of exercises, and submaximal work load.
Considerations before exercise program

Is new weakness due to overexertion or inactivity?

- **Overexertion**: Technical aids / Energy management
  Maybe light exercise

- **Inactivity**: Exercise and increase activity level

Is muscle strength stable or unstable?
<table>
<thead>
<tr>
<th>Muscle status in actual muscle group</th>
<th>Muscle strength in actual muscle group</th>
<th>Exercise</th>
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</thead>
<tbody>
<tr>
<td>No new weakness</td>
<td>Normal</td>
<td>No restrictions</td>
</tr>
<tr>
<td>No new weakness</td>
<td>Reduced</td>
<td>Short period of strength exercise (4 – 6 weeks)</td>
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<tr>
<td>New weakness</td>
<td>Reduced</td>
<td>Submaximal exercise</td>
</tr>
<tr>
<td>New weakness</td>
<td>Very reduced</td>
<td>Low intensive exercise</td>
</tr>
<tr>
<td>Large atrophy</td>
<td>Very reduced</td>
<td>No exercise</td>
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Source: MD Gunnar Grimby and PT Carin Willén, Sweden
Principles for training endurance /strength for polio survivors:

- Low to moderate resistance + many repetitions
- Slow progression
- Training in intervals
- Breaks in training session
- Avoid excessive pain and fatigue
Principles for training cardio respiratory fitness for polio survivors:

- Slow progression
- Exercise feels “Somewhat hard” at Borg scale 11-14
- Bicycling, swimming etc.
- Exercise at 60 –70% of HRR
  \((HR_{max} – HR_{rest}) + HR_{rest}\)
- 10-30 minutes depending on the condition
- At least twice a week to maintain level
Signs of too hard training:
• Excessive fatigue after exercising
• Excessive pain after exercising
• Fasciculation

Recommendations:
• Exercise with less resistance (½)
• Decrease the number of repetitions
• Decrease the frequency of exercising
• Exercise in a different way
• More breaks

Maybe daily activities are enough exercising for the patient

Patient must respect the signs of the body
Group training

- General exercises
- Balance training
- Pilates
- Warm water exercising
- Relaxing group
- Cardio respiratory
- Special groups for muslim women

Home exercise programme

- Dumbbells
- Nordic walking
- Thera bands
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Moving on...
Thank you for your attention and participation

- Any questions or comments?