

## Chapter 13: Executive Summary

### A Summary of an Evaluation of Integrative Manual Therapy for Treatment of Parkinson's Disease Symptoms

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#### ABSTRACT

THESIS: Sixty hours of treatment with Integrative Manual Therapy  
(IMT) will considerably decrease signs and symptoms in people with  
Parkinson's disease (PD), including a decrease in tremors, an alleviation

of pain, a speeding up of gait and improvements in respiration, facial expression, speech and mood.

**OBJECTIVE:** To show that IMT will improve the symptoms and function in people with PD. The purpose of this study is to contribute to the understanding of the effects of manual therapy on neurological conditions. This dissertation specifically examines the effect of IMT in PD.

**METHODS:** Single-subject Research Design Case Study. The neurologist's evaluations were a month apart while the physical therapy assessments took place on the day before and the day after the two week treatment protocol. The participant also completed 6 questionnaires.

**TREATMENT:** In this case study 60 hours of IMT took place over a two week period (five hours each day on 12 days). Nutritional and self-care recommendations were made after the post testing.

**RESULTS:** The 62 year old man diagnosed four years ago with PD made improvements in virtually all assessed categories. Notable gains include a 48.6% improvement in total Unified Parkinson Disease Rating Scale (UPDRS) scores. Schwab and England scores changed from 70% to 80% of normal function. The Up & Go Test and 10 Meter Walk showed improvements in walking speed and stride length. Lung capacity readings (a spirometer measurement) improved from 2800 cc to 3300 cc. The PDQ-39 questionnaire showed a 67% improvement in symptoms. The Medical Symptoms Questionnaire (MSQ) score improved 51.3%. The McGill Pain Questionnaire showed a 73.3% decrease in pain, primarily

back and hip pain.

**DISCUSSION:** The results show important changes in function, pain, and general well-being. This is significant given the expected 3.1% annual increase in the UPDRS motor scores and a 3.2% decline in Hoehn and Yahr staging levels. This case study did not have a blinded control but results were compared to predictors of outcome in the medical literature. Even without a control, these findings are substantial enough to suggest further research into how IMT can be incorporated into treatment plans.

**CONCLUSIONS:** This is the first evidence-based study on the effects of Integrative Manual Therapy in Parkinson's disease. The improvements should serve as a stimulus to therapists to use IMT as a way to improve the client's quality of life. IMT is not a common component of rehabilitation programs, but is one that deserves more attention.

**Key Words:**

Parkinson's disease, Integrative Manual Therapy, Strain and Counterstrain, Muscle Energy Technique, Circadian Rhythms, Neurodegenerative Disorders, Neuro-rehabilitation, Resting Tremors, Shuffling Gait, Speech, Facial Expression, Complementary and Alternative Medicine.

**Condition Studied:**

Parkinson's Disease

## Treatment Intervention / Procedure

Integrative Manual Therapy (IMT)

## Setting

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## Study Type

Interventional - Single-subject Research Design Case Study as part of the PhD dissertation to be followed by a Group Design Controlled (Wait Listing control).

Total Expected Cost for a future 30 Participant Pilot Study:

\$427,300 funded with grant monies

## Introduction

Integrative Manual Therapy (IMT) is a hands-on therapy approach to the recovery from neurological dysfunctions and other health concerns. This study's hypothesis is that 60 hours of IMT treatment can contribute to significant improvements in six areas: tremors, gait, speech, facial expression, mood and lung capacity.

Parkinson's disease (PD) is a progressive neurodegenerative

disorder of unknown etiology in which several underlying pathophysiological mechanisms, including proteasomal degradation, mitochondrial dysfunction, inflammation, oxidative stress, and excitotoxicity may contribute to cell death. (National Institute of Neurological Disorders and Stroke, 2004).

From a medical point of view, no treatment is known or proven to cure or delay the progression of PD, thus there is a need to investigate promising treatments, which could potentially “cure or delay progression of symptoms. “Current treatments for Parkinson's disease do not aim at protecting the dopamine-producing neurons themselves. Rather, the treatments seek to restore dopamine levels in the brain or to treat symptoms of the disease.” (Lindquist, 2006).

At this point, evidence from testimonials and case studies indicates that IMT is beneficial in stopping or slowing the degenerative process in PD. Many IMT clients are reporting a decrease in their symptoms and an improvement in function. The goal of this study is to evaluate the effectiveness of IMT compared with predictors of outcome stated in the literature for PD. Since IMT has been in development for the last 30 years, this case study will be a step towards validating the clinical experience of IMT therapists to date.

A future pilot study will take place at the Center for Integrative Manual Therapy and Diagnostics (CenterIMT). The pilot study will include 30 people diagnosed with Parkinson’s disease in the last five years. The

results of this and future studies will benefit anyone with PD who is treated with IMT at one of CenterIMT's 22 facilities in the US and abroad.

The results of this study will be published and used in IMT courses to enable practitioners to use the knowledge gained with their clients.

There are several thousand therapists who have studied IMT, who would have access to the material and the skills to put into place the treatment protocols. As part of the PhD dissertation, a home care program consisting of exercises and nutritional recommendations has also been developed for clients and practitioners.

Organizations involved in this study are Westbrook University's PhD program, DCR Products and the Connecticut School for Integrative Manual Therapy (which is providing information technology support)..

The treatment protocol is considered to be reproducible by any therapist with advanced level IMT skills.

The expectation is that these results will be published as a single-subject designs case study and the pilot study to follow will be published in a peer reviewed neurology journal.

Although there is limited evidence, traditional physical therapy, occupational therapy and a wide array of CAM methods are sought out by clients with PD. This dissertation contributes to the evidence of the benefit of hands-on therapies.

This study looks at the effect of IMT on motor and non-motor symptoms of Parkinson's disease using a single-subject design case

study format. It uses pre-testing and post-testing to assess the changes in motor, respiratory and other symptoms. The treatment protocol is 60 hours of IMT treatment (5 hours per day) over a period of two weeks.

Assessments were performed at baseline and after the treatment protocol. After the post test, the client, a 62 year old man diagnosed with PD four years ago, started a biophysiology (nutritional) program and a self-care (Neurofascial Process and Synchronizer) program.

There are no studies in the medical literature on the effect of IMT on reversing the symptoms of Parkinson's disease. This dissertation, the completed single-subject design case study and the design of a 30 person pilot clinical trial are a start and will lead to further research on what conditions respond to IMT.

Typically, despite optimal medical and surgical therapies for Parkinson's disease, patients develop progressive disability. The role of the IMT therapist is to maximize functional ability and minimize secondary complications through hands-on treatment and rehabilitation within a context of education and support for the whole person.

Non-pharmacologic or non-surgical treatments of degenerative neurological disorders have received little scientific interest (Deane, 2001). However, Integrative Manual Therapy, physical therapy, occupational therapy, chiropractics, osteopathic manual therapy (OMT) Qigong, Alexander technique, music therapy, Reiki, Taichi and more are frequently used by patients with chronic neurologic diseases. The evaluation of such

therapies is important because CAM therapies, including IMT are being used more and more.

In a study of the "Use of complementary and alternative medical therapies in a pediatric neurology clinic " researchers found that forty-six (44%) out of 105 children received one or more types of CAM, with the most common types being chiropractic manipulations (15%), dietary therapy (12%), herbal remedies (8%), homeopathy (8%), and prayer/faith healing (8%). Fifty-nine percent of CAM users reported benefits, and only one patient experienced side effects. There was no significant difference in the total median cost of CAM compared to conventional therapies (31.70 dollars vs. 50.00 dollars per month). Care givers' personal experience or success stories from friends and media were common reasons for trying CAM." (Soo, 2005).

In another CAM study, researchers found that "the level of knowledge reported by 138 critical care nurse respondents was greatest for diet, exercise, massage, prayer, and music therapy. Use of therapies was related to knowledge and training and consistent with beliefs of legitimacy and perceptions of beneficial effects. Despite barriers including lack of knowledge, time, and training, 88% of respondents were open or eager to use CAM, and 60% reported moderate or greater desire to use CAM." (Tracy, 2003).

This study determines the effect of an intensive period of IMT as a complementary therapeutic measure in PD. IMT uses gentle pressure to

help the tissues to shift, allowing for better movement of muscles and joints as well as blood flow. The techniques, primarily developed by Sharon W. Giammatteo, PhD, PT, are used by therapists, while the client rests on a massage table.

The beneficial effects of IMT have been reported for a variety of complaints: neurological disorders such as autism (NBC 30, 2005) and anxiety (Pick, 2005), geriatric conditions (Yonemoto, 2005), chronically ill clients (Crowell, 2004), head and neck tension (Caperonis, 2002), knee injuries (Giammatteo, 2000), facial palsy (Giammatteo, 2005; Griffin, 2000), orthopedic and athletic injuries (Holt, 2004), and spinal problems and scoliosis (Kain, 1991; Leger, 2004; Lunn, 2005).

In the United States, the use of CAM increased by approximately 25% between 1990 and 1997. The number of visits to CAM practitioners exceeded visits to primary care physicians by about 250 million in 1997. Integrative Manual Therapy is taking its place within the field of complementary and alternative medicine.

This study uses outcome measures commonly found in the medical literature. The results can be compared to the results in other studies. The results are in a format that can be easily understood and discussed with other health care professionals. The primary outcome measures are: an evaluation by a neurologist (UPDRS, Schwab and England, Hoehn and Yahr), fine motor skills, gross motor skills, balance, spinal range of motion and respiratory function evaluated by a physical therapist. There are also

photographs, video and subjective questionnaires (Beck Depression Inventory, The Parkinson's Disease Quality of Life Questionnaire, the McGill Pain Scale and the Medical Symptoms Questionnaire.

Changes in tremors, walking / gait, respiration, speech, facial expression and subjective symptoms are evaluated. Based on clinical cases to date, positive changes were expected in each area of function and quality of life.

### Objective

To show that IMT will improve the symptoms and function in people with PD. The purpose of this study is to contribute to the understanding of the effects of manual therapy on neurological conditions. This dissertation specifically examines the effect of IMT in PD.

The study examines how Integrative Manual Therapy ([www.CenterIMT.com](http://www.CenterIMT.com)), which is an innovative hands-on approach to improving health and quality of life, can improve tremors, gait, respiratory function, speech, and facial expressiveness in people with PD.

IMT has been in development for the last 30 years. This single-subject research design case study will be a step towards validating the clinical experience of IMT therapists to date.

### Methods and Outcomes Assessment

A neurologist and physical therapist did baseline evaluations and a

follow up evaluation. The participant completed 6 questionnaires, before the two week treatment period start and on completion of the treatment sessions.

The findings of this 60 hour interventional study will contribute to the available knowledge on effect of touch and pressure in specific locations on neurodegenerative conditions. It will also give a better understanding of the place of Integrative Manual Therapy in neurorehabilitation programs.

The evaluation process includes measurable objectives with specific methods used to evaluate each objective. Consideration has been given to the reproducibility of all the evaluation methods.

Outcomes measured include: UPDRS, Hoehn and Yahr, Schwab and England ADL, Up and Go Test, 10 Meter Walk, Lung Capacity and PDQ-39.

Eligibility for the future pilot study include: Idiopathic Parkinson's disease less than 5 years post diagnosis. Male or Female age 50-80. No one with surgery or medication induced symptoms or recent manual therapy treatment will be included.

#### Treatment / Intervention

The 62 year old client, R.O. was diagnosed with PD four years ago. His major goals are: 1. Eliminate and move without back and right hip pain; 2. Eliminate tremors; 3. Do activities of daily living smoothly and

efficiently; 5. Be able to return to work.

He is not on any medications and is a vegetarian interested in transcendental meditation. He played semipro football and is working on his PhD dissertation in Quantum Physics. His hobbies are listening to music and reading.

He broke his right elbow in 1997 in a bicycle accident and had surgery to repair it. He was mugged and stabbed with the wound going through the pericardium in 1973. He was hospitalized in 1965 for a blood clot in his thigh. He has recently lost about 30 pounds without trying and without any other explained reason.

The treatment protocol included 60 hours of treatment and 6 hours of evaluation. In the section that follows is a list of the main focus of the Integrative Manual Therapy treatment and the hypothesis behind what each of the techniques are affecting. The names of the IMT techniques are also listed for the interest of other IMT therapists reading this dissertation.

Treatment included a focus on 7 systems or areas: musculoskeletal, circulatory, cranial, biomechanical, digestive, physiology, and psycho-social-emotional.

#### Assessment of Benefits and Risks

The form of treatment, Integrative Manual Therapy, used in this study carries no known risks or side effects. The benefits are clearly

shown in the results section.

## Results

The outcome measures evaluated were chosen because of reliability, objectivity and wide-spread use in PD research.

Notable gains include a 48.6% improvement in total Unified Parkinson Disease Rating Scale (UPDRS) scores. Schwab and England scores changed from 70% to 80% of normal function. The Up & Go Test and 10 Meter Walk showed improvements in walking speed and stride length. The PDQ-39 questionnaire (the most commonly used questionnaire in PD) showed a 67% improvement in symptoms. The Medical Symptoms Questionnaire (MSQ) score improved 51.3%. The McGill Pain Questionnaire showed a 73.3% decrease in pain, primarily back and hip pain.

The results show important changes in function, pain, and general well-being. This is significant given the expected 3.1 percent annual increase in the UPDRS motor scores and a 3.2 percent decline in Hoehn and Yahr staging. This case study had no control. Even without a control, these findings are substantial enough to indicate further research into how IMT can be incorporated into the treatment plan for people with PD, in order to facilitate quality of life and decrease symptoms.

A surprising improvement was found in the lung capacity measured with a spirometer. The readings showed an improvement in the respiratory

system with the 62 year old client going from the equivalent of a 70 year old man to the average lung capacity for a 50 year old man.

The following table gives all the results with the raw data and the percentages of improvement or change.

Table 12: Over All Outcome Measures

Tests / Outcome Measured	Pre-Treatment Feb 27, 2006	Post-Treatment March 31, 2006	Improvements
UPDRS (motor, mentation, Activities of daily living) Total Score	35	18	48.6 %
UPDRS ADL Score	15	10	33.3 %
UPDRS Motor Score	19	8	57.8 %
Hoehn and Yahr stage	2	2	No change
Schwab and England ADL Percentage	70	80	12.5 %
Tests / Outcome Measured	Pre-Treatment March 2, 2006	Post-Treatment March 17, 2006	Improvements
Lumbar ROM Flexion in degrees	5	15	10 degrees
Lumbar ROM Extension in degrees	0	5	5 degrees
Up and Go Test number of seconds	10	9	10 %
Up and Go test number of steps	12	10	16.7 %

Ten Meter Walk number of seconds	7	6	14.2 %
Ten Meter Walk number of steps	12	11	8.4 %
Bergs Balance Test out of a possible 56	55	56	1.8 %
Tinetti Balance Test out of a possible 16	15	15	No change
Lung Capacity measured in cc with a Spiropet Hand Held Spirometer	2800	3300	15.2 %
Lung Capacity by Age category (62 year old client)	65-70 year old category	51-55 year old category	approximately a 15-20 year improvement / reversal
Questionnaires	Pre-Treatment March 2, 2006	Post-Treatment March 17, 2006	Improvements
PDQ-39 Total	25 % (39)	8 % (13)	67 %
PDQ-39 Mobility	Mobility 15 % (6 points)	Mobility 12.5 % (5 points)	16.7 %
PDQ-39 Bodily discomfort	Bodily discomfort 66.66 % (8)	Bodily discomfort 16.66 % (2)	75 %
McGill Pain Questionnaire	15	4	73.3 %
Medical Symptoms Questionnaire (MSQ) Total	74	36	51.3 %
MSQ Ears	4	2	50 %
MSQ Nose	7	6	14.2 %
MSQ Skin	6	4	33.3 %
MSQ Lungs	4	1	75 %

MSQ Digestive Tract	1	2	symptoms increased
MSQ Joints/Muscles	15	2	86.7 %
MSQ Energy/Activity	6	1	83.3 %
MSQ Mind	9	4	55.6 %

## Discussion

Assessed in the present study are the benefit of Integrative Manual Therapy for a 62 year old man with Parkinson's disease. Although a slow progression is expected in PD, the findings showed a substantial improvement of his symptoms over the two week treatment period. The use of different clinical measurements of motor function and disability is one of the strengths of this study.

The results showed important changes in function, pain, and general well-being. This is significant given the expected 3.1 percent annual increase in the UPDRS motor scores. (Alves, 2005). Alves also found a UPDRS Activity of Daily Living (ADL) score increase of 3.5 per year and a Schwab and England scale change of 3.6 percent per year. Alves found that "motor function and disability worsened significantly with time. Age, age at onset and disease duration, as well as symptoms thought to be due to involvement of non-dopaminergic brain structures, are predictors of more impaired motor function and disability." (Alves, 2005).

The design of the study was well researched but further research after the case study was completed will change future studies. This case study had no control. Based on further research, the control could have been a wait listed control, where the client is evaluated, then there is no intervention for the same period of time as the intervention, in this case two weeks. Then the client is re-evaluated. Researchers are looking for stability or other factors that could be influencing the changes. If there is little or no change during this non-intervention period, then the baseline test scores are taken. These non-intervention scores are then compared to the post treatment scores. To establish the baseline there may have to be several “non-intervention” periods.

Even without a control, these findings are substantial enough to indicate further research into how Integrative Manual Therapy can be incorporated into treatment plans for people with Parkinson’s disease, in order to facilitate quality of life and decrease symptoms.

## Conclusion

This is the first evidence-based study of the effects of Integrative Manual Therapy in Parkinson's disease. The substantial improvements in motor function, respiratory capacity, activities of daily living and emotional factors were related to the IMT treatment

This study should serve as a stimulus to therapists to look to IMT to improve the quality of life of clients with PD. IMT is not a common

component of rehabilitation programs, but it is one that deserves more attention.

Large well-designed controlled studies are needed to demonstrate the efficacy and effectiveness of paramedical therapies in PD. Outcome measures with particular relevance to clients, care givers, physicians and therapists should be chosen and the clients monitored for at least 6 months to determine the duration of benefit. The trials should be reported using CONSORT guidelines.

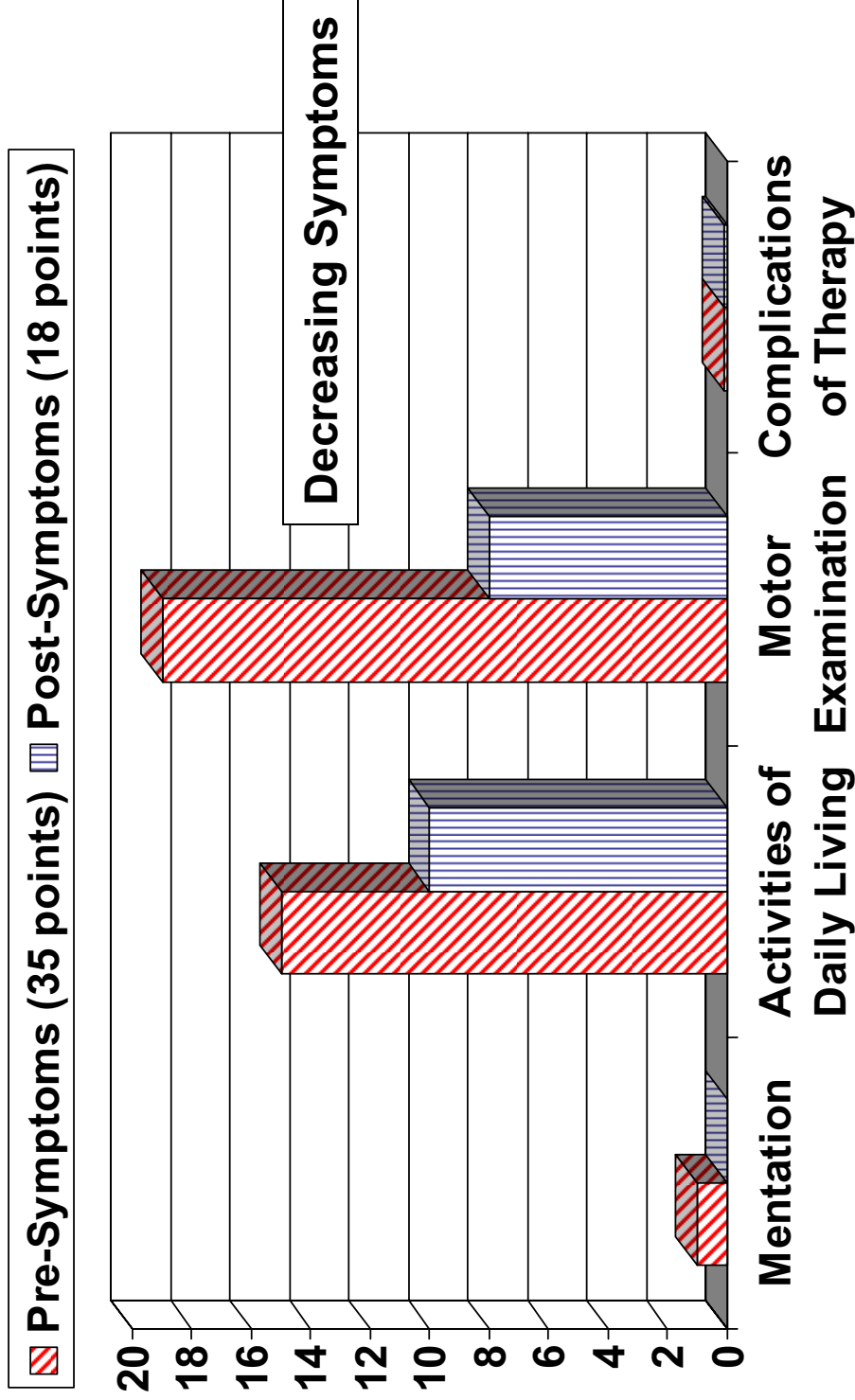
# **Parkinson's Disease Results**

**March 2-17, 2006**

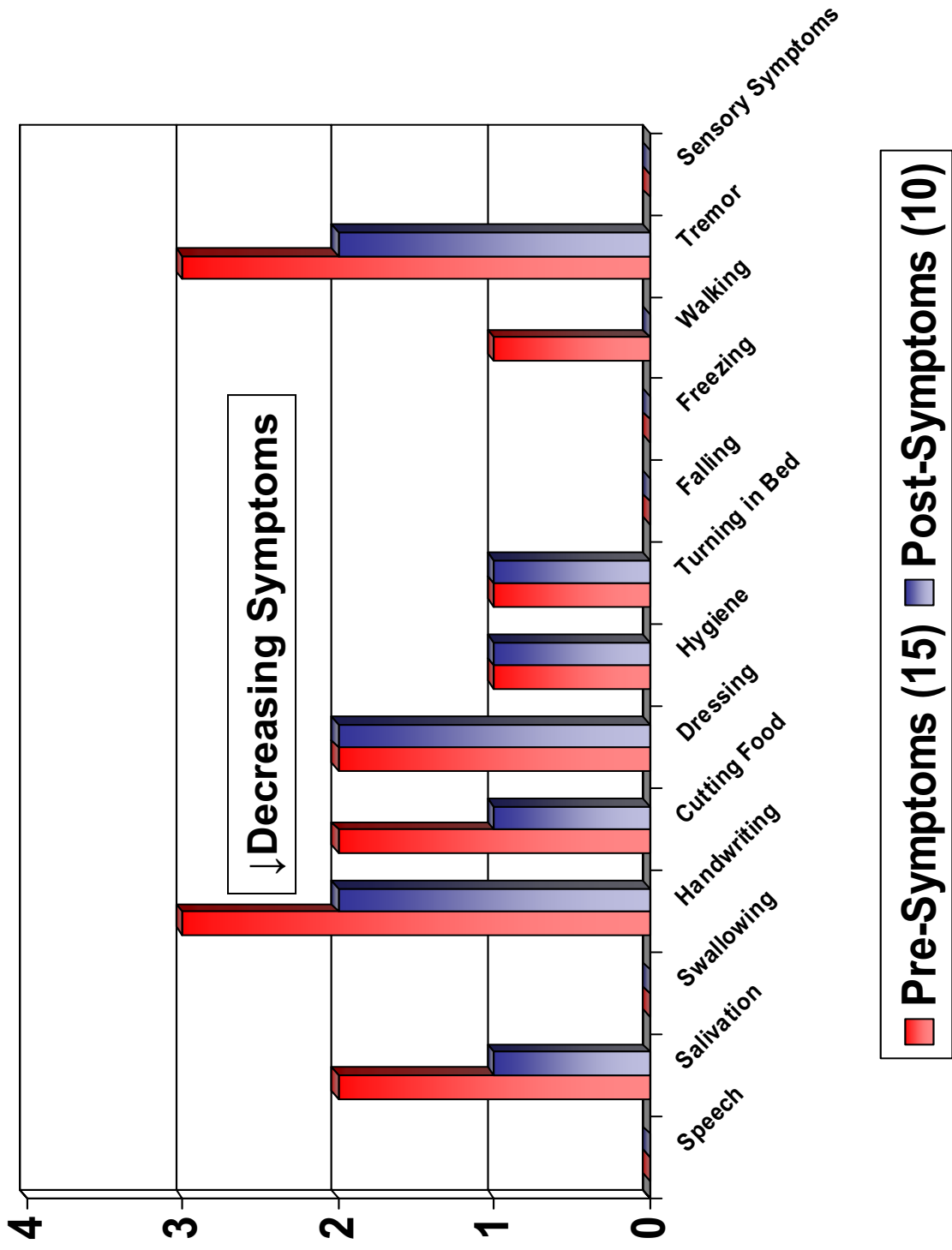
# Neurologist's Report March 2006

- The client, a 62 year old man diagnosed with Parkinson's Disease 4 years ago. He was evaluated by a neurologist February 27, 2006 and on March 31, 2006.
- Initially, he had a UPDRS rating of 35 and is not on medication. The Unified Parkinson's Disease Rating Scale (UPDRS) is made up of Mentation, Behavior, and Mood, Activities of Daily Living and Motor sections. A total of 199 points are possible. 199 represents the worst (total) disability) with 0 representing no disability.
- His symptoms improved in all categories. Mentation rose from 1 (less assertive than usual; more passive) to 0 (normal motivation/initiative). Activities of daily living jumped from 15 to 10 symptom points. Notably salivation went from (2) Moderately excessive saliva with some drooling to (1) slight but definite excess saliva in mouth, may have nighttime drooling; (3) Severely affected handwriting, not all words are legible to (2) Moderately slow or small handwriting, all words are legible. Walking from (1) mild difficulty, may not swing arms or may tend to drag leg to (0) Normal. Tremors went from (3) Severe, interferes with most activities to (2) Moderate, bothersome to patient.
- Motor Examination improved from 19 symptoms points to 8 in the post test with improvements in facial expression, tremors at rest, finger taps, hand movements, hand pronation-supination movements, leg agility, arising from a chair, posture, and gait. Most notably in this section were the improvements in tremors at rest and rigidity. Tremors at rest improved from (3) Moderate in amplitude and present most of the time to (2) mild in amplitude and persistent. or moderate in amplitude but only intermittently present. Rigidity improved from (3) Marked, but full range of motion easily achieved to (1) Slight or detectable only when activated by mirror or other movements.
- He is in Stage 2 with bilateral disease, without impairment of balance as described by the Hoehn and Yahr Staging of Parkinson's Disease. The Hoehn and Yahr rating system has been largely supplanted by the Unified Parkinson's Disease Rating Scale, which is much more complicated. Results are described in five stages: Stage 1 Stage 2 Stage 3 Stage 4 Stage 5. This did not change categories in the post test.
- He scored 70 percent on the Schwab and England Activities of Daily Living Assessment. Seventy percent is described as "Not completely independent. More difficulty some chores. Three to four time as long in some. Must spend large part of the day with chores." The Schwab and England Activities of Daily Living was developed by Gillingham FJ, Donaldson MC, eds., Third Symp. of Parkinson's Disease, Edinburgh, Scotland, E&S Livingstone, 1969, pp.152-7. Rating can be assigned by rater or by patient. Results are described as a percentage from 100.
- In the post test he scored 80 percent on the Schwab and England Activities of Daily Living test. Eighty percent is described as Completely independent in most chores. Takes twice as long. Conscious of difficulty and slowness.

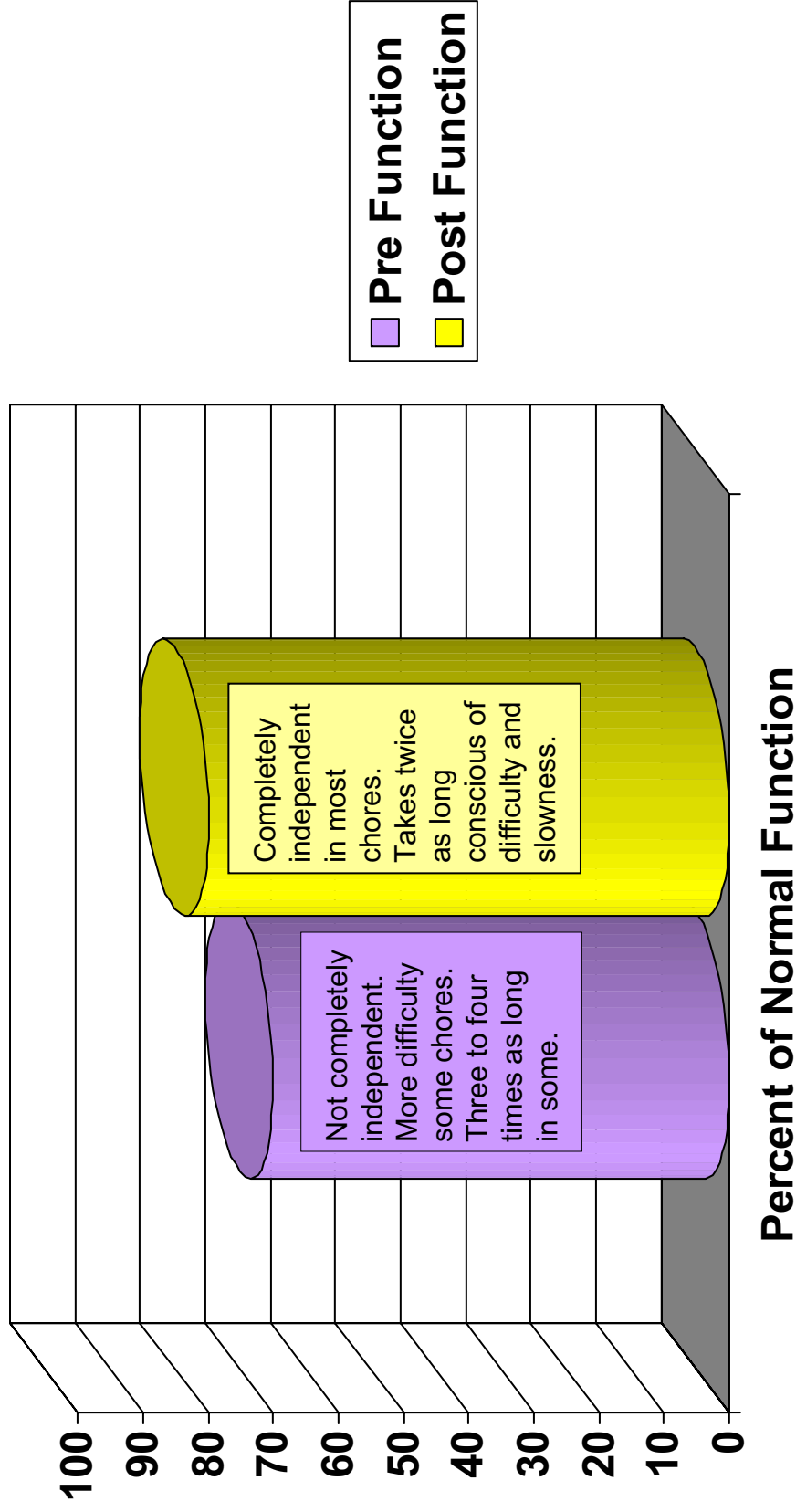
# Unified Parkinson's Disease Rating Scale (UPDRS)



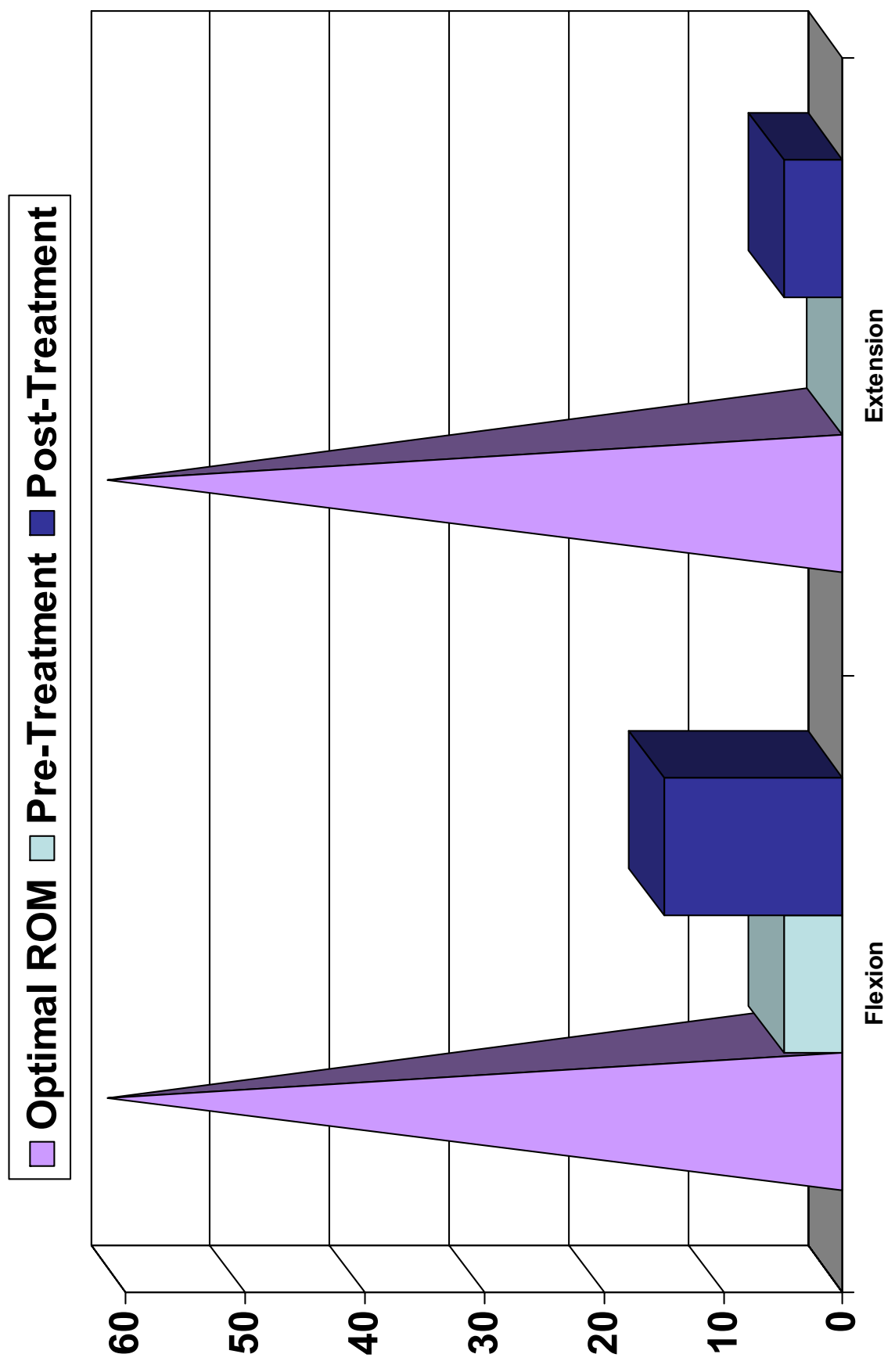
# Activities of Daily Living Improvements (UPDRS)



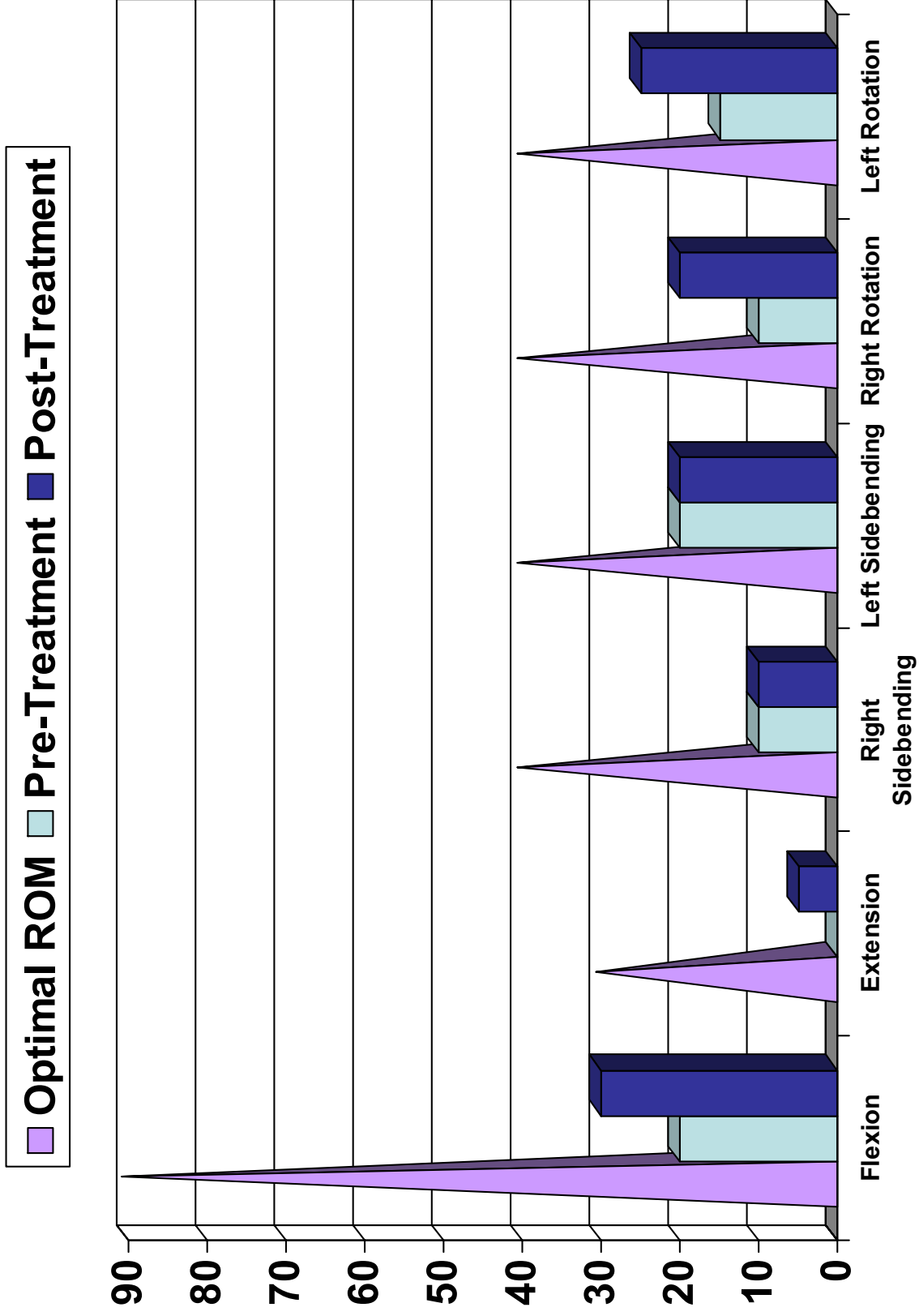
# Modified Schwab and England Activities of Daily Living



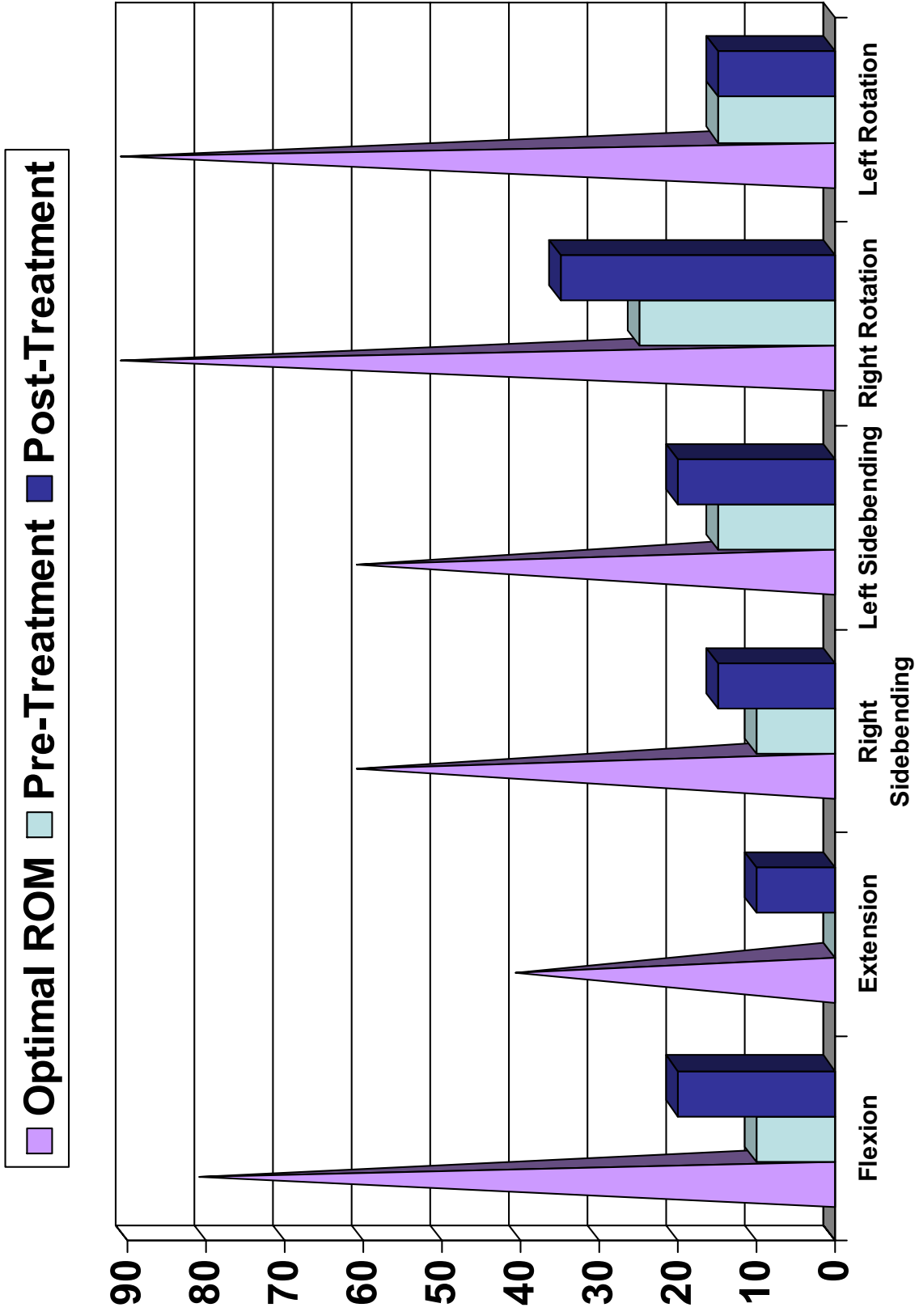
# Lumbar Ranges of Motion



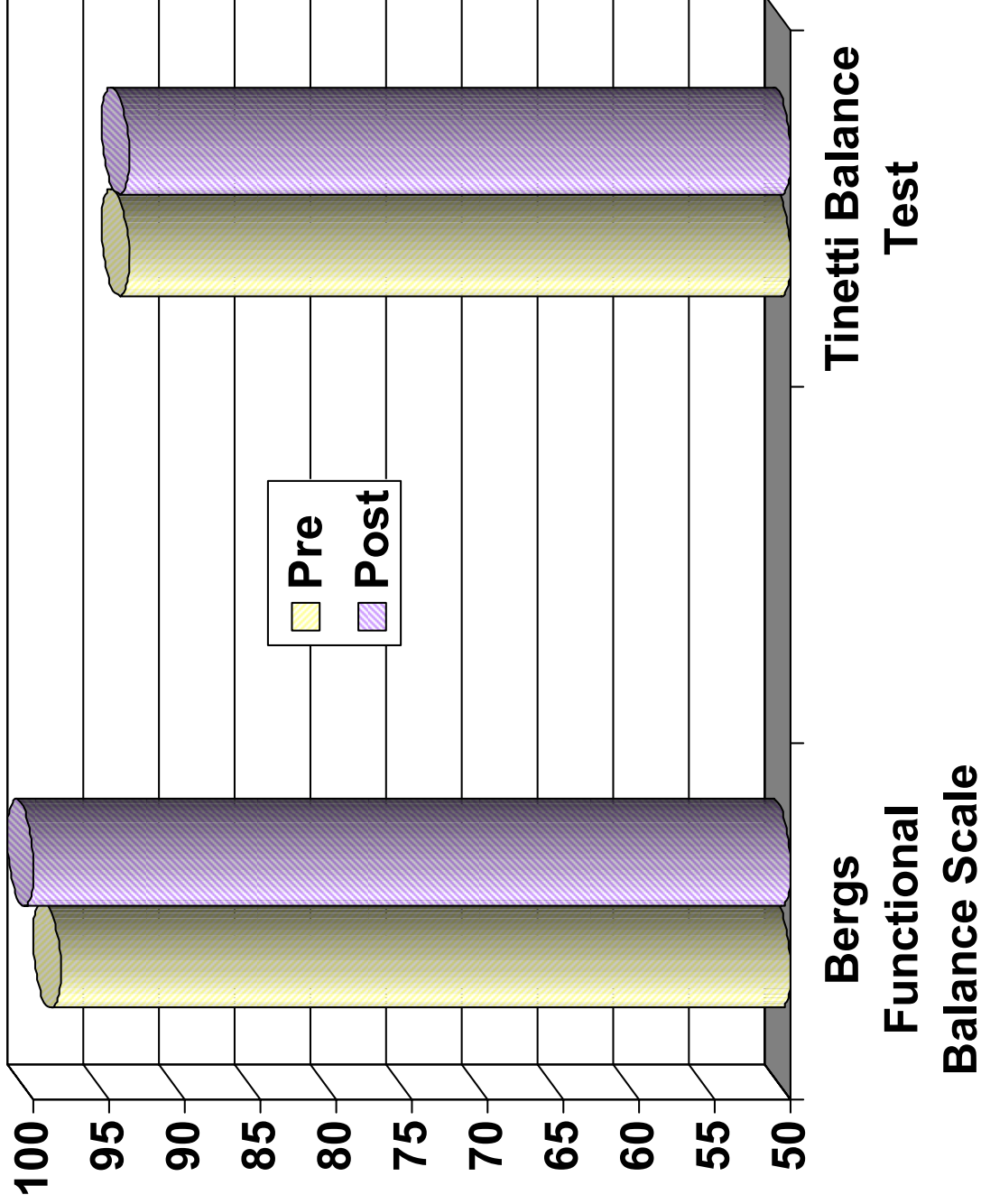
# Thoracic Ranges of Motion



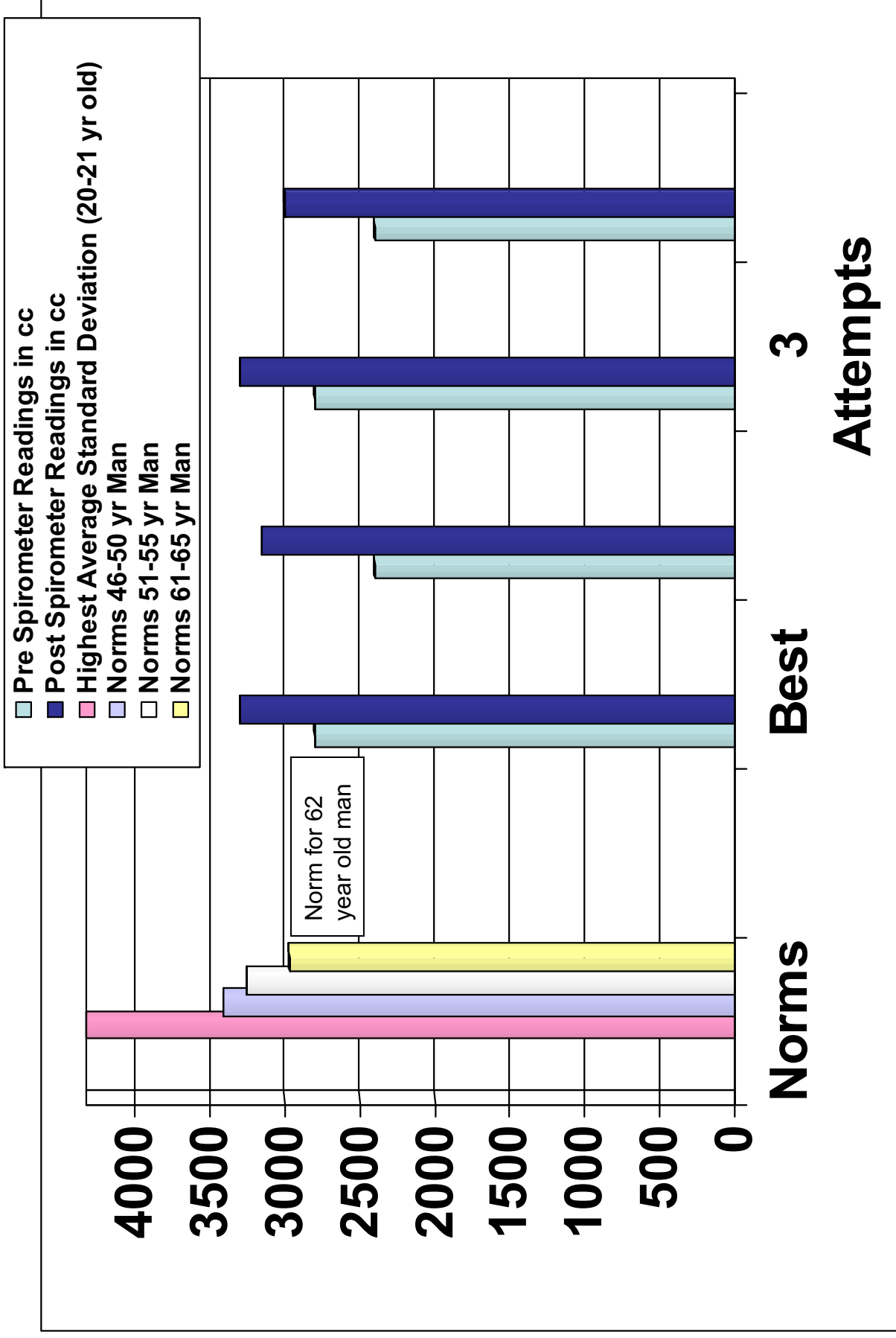
# Cervical Ranges of Motion



# Balance Testing



# Respiratory Capacity

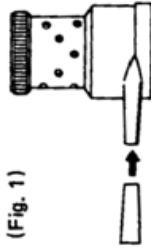


# Spirometer

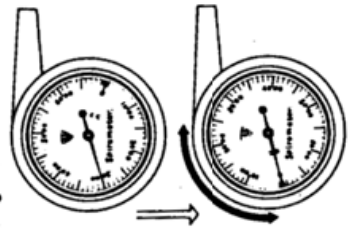
Spiropet is a completely new product. It can measure lung capacity without using water. It has a number of advantages over conventional tank-type spirometers, which make it easier to handle: handiness (lightweight and small size) and it has a broad measurement range (1000 to 7000 cc). It can be used for many purposes, in including sports tests and health care.

## How to use

- Set end of mouthpiece to nozzle ①. (Fig. 1)
- Hold Spiropet by one hand and confirm that indicator points at zero.
- If indicator does not point at zero, adjust to zero by moving upper outer ring ② to right or left. (Fig. 2)
- Next, inhale deeply stretching body upward.
- When lungs are full, set mouthpiece between lips. Breathe out strongly in one motion, without leaking. It is a knack to breathe out as completely as possible, within 5 or 6 seconds. For fixed measurement, it is necessary to keep the same way of breathing out.
- After breathing out, read measurement on indicator.
- Repeat three times. The maximum value of the three measurements is your lung capacity.



(Fig. 1)

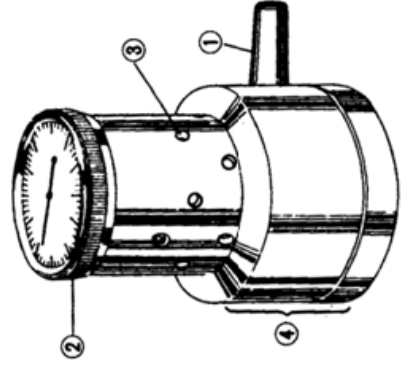


(Fig. 2)

## Precautions

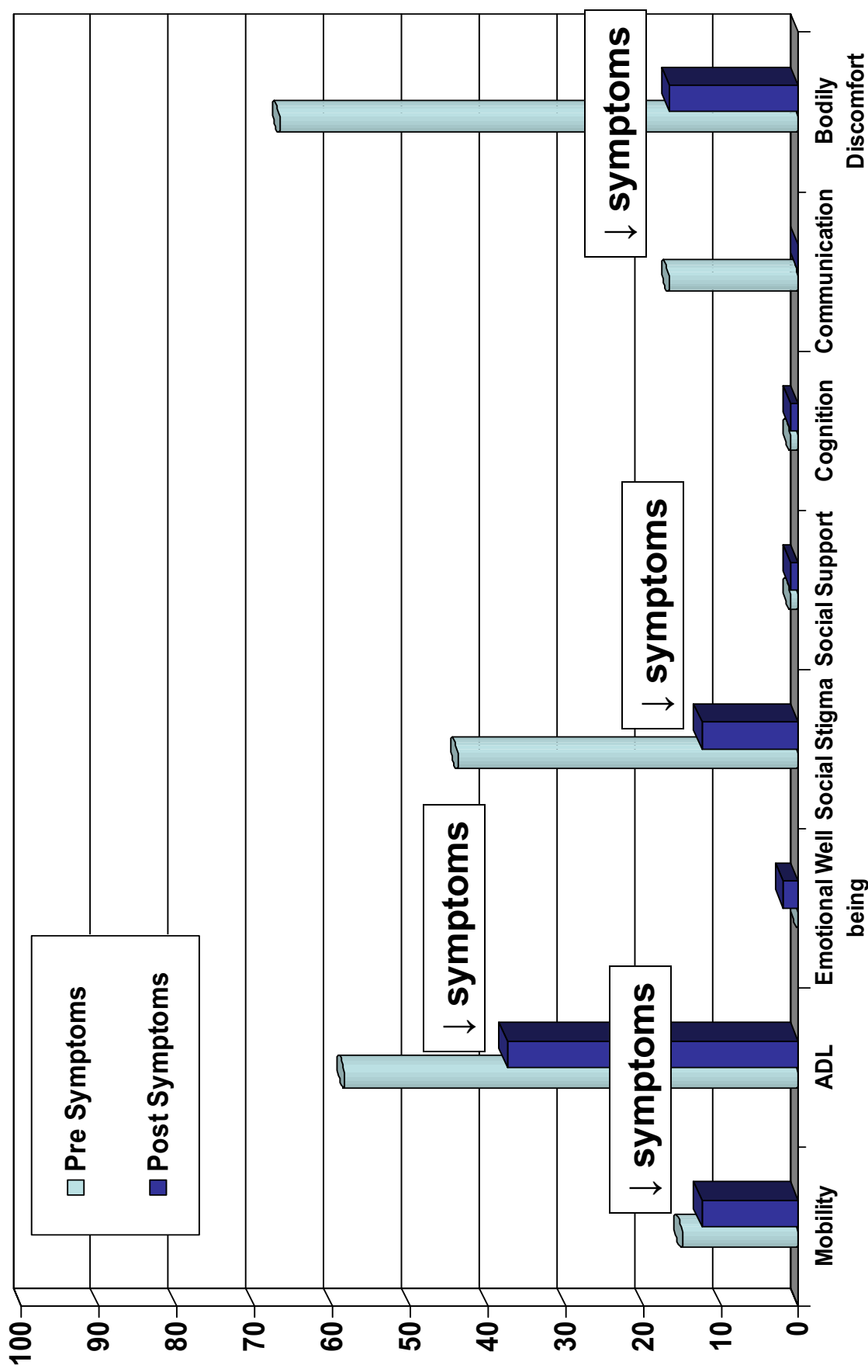
- Keep Spiropet horizontal during measurement. (If it is not kept still, the vanes cannot revolve evenly and measurements result will not be correct.)
- When using, do not cover up the small holes which are at the side of the upper body ③ with your hands.
- When used frequently, water drops and saliva will condense inside. Accuracy is lost. Once every ten measurements, remove the lower body ④ and clean inside with a cloth. (It is easily removed by turning it clockwise)
- Spiropet is a precision instrument like a watch. Handle it carefully.

## Specifications

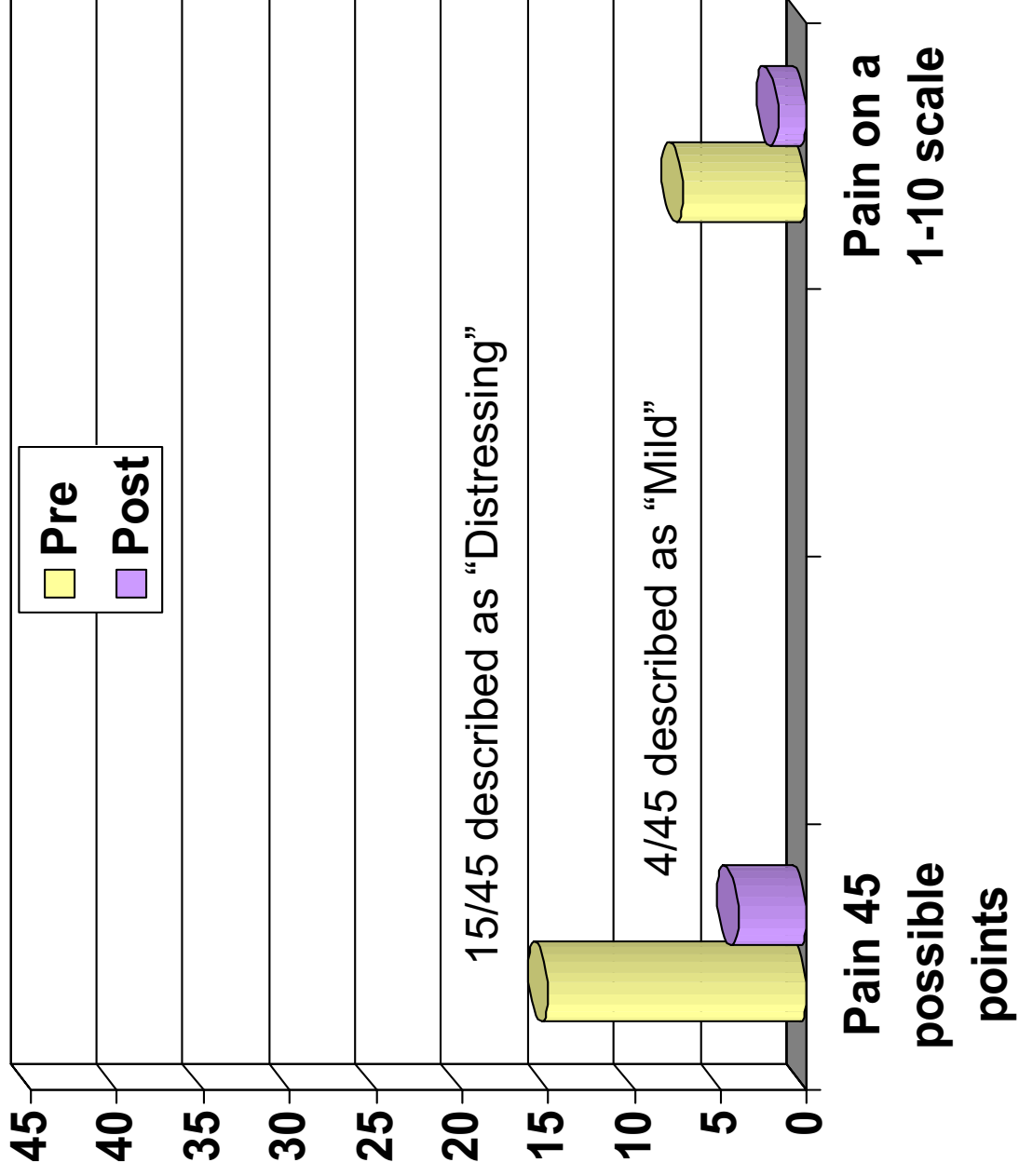


Measurement range:  
1000 to  
7000cc/100cc

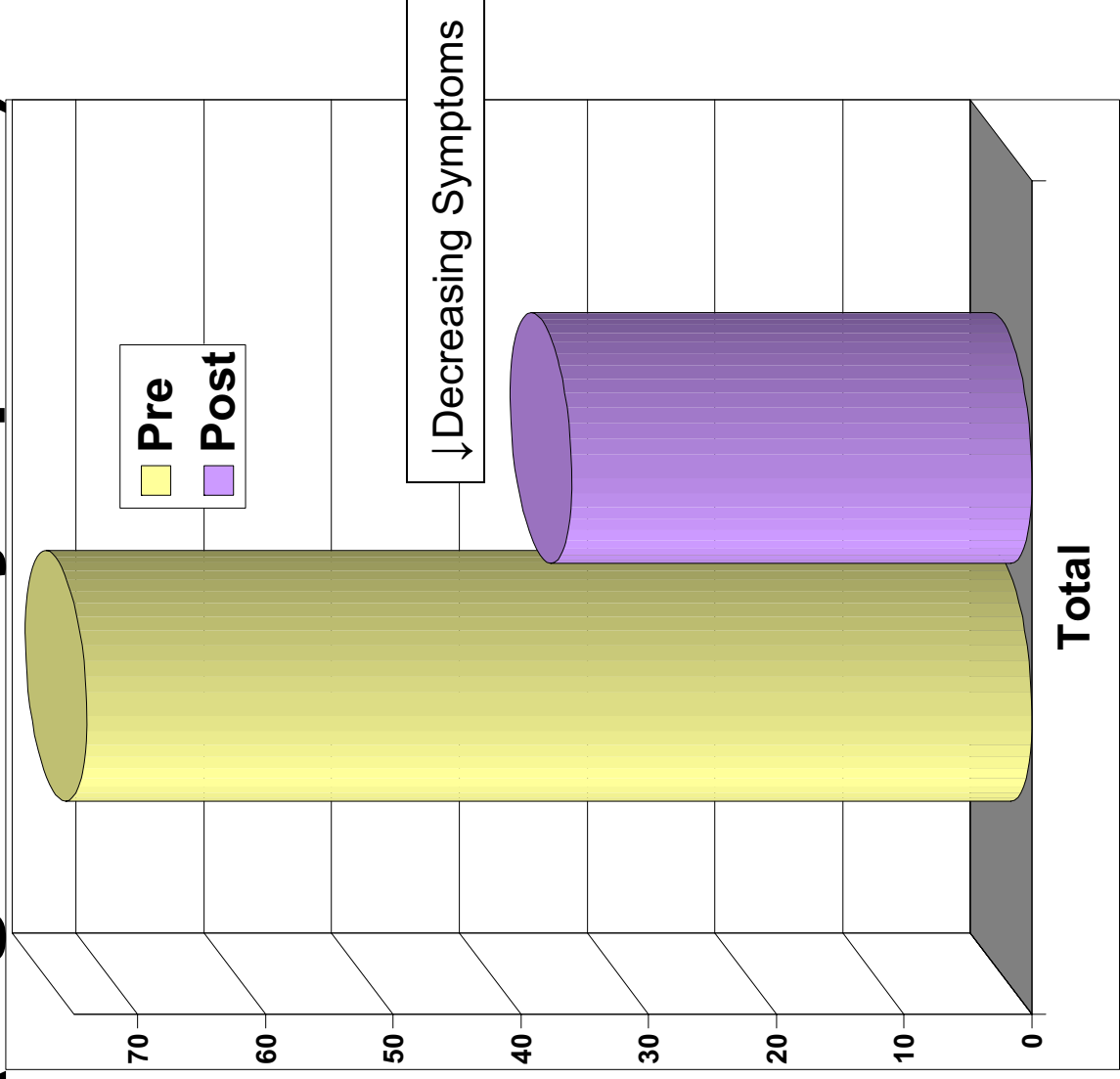
# PDQ-39 Parkinson's Case Changes with 60 hrs of treatment



# McGill Pain Questionnaire



# Medical Symptoms Questionnaire (Signs & Symptoms)



# Medical Symptoms Questionnaire

