

KØBENHAVNS UNIVERSITET Odontologisk Institut
 Det Sundhedsvidenskabelige Fakultet

ACTuell gerodonti 2020 - digital åldretandvårdskonferens

Aktuell forskning om oralmotorisk træning ved Parkinsons sygdom

Live-streamed webinarium
 02-10-2020
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 Klinisk Oral Fysiologi

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Parkinsons Disease (PD) – Motor symptoms

Stooped posture
 Arms carried in front of body
 Arms do not swing
 Slowness and poverty of movement
 Rigidity
 Legs stiff, bent at knees and hips
 Short shuffling gait

Altered body attitude and tripping gait

"Pill-rolling" tremor
 Tremor - "pill-rolling tremor"

Mask face, reduced blinking and "reptile" eyes

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Screening: More than 4 YES can be early signs of Parkinson's disease

	YES	NO
Does your hand tremble even when you relax it?		
Is your arm bent and does it not follow the movements of your body when you walk?		
Do you walk with a forward-bend posture?		
Is your walk slightly hampered, or do you pull a leg after you?		
Do you take small steps, or do you often stumble and fall?		
Do you suffer from energy depletion and lack of initiative?		
Do you have frequent pain in the neck and shoulder area?		
Do you withdraw from friends and acquaintances? Do you avoid contact? Do you lack the desire?		
Has your voice changed? Is it more monotonous and low? Does it sound hoarse?		
Has your writing become smaller and more "rubbed"?		
Do you suffer from "inner unrest"? Are you shaking inside?		
Do you have sleep disorders?		

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PD – diagnostics

The diagnosis is made clinically on the basis of medical history

The first symptoms of the disease occurs when 50-70% of the nerve cells are destroyed, i.e. several years after the onset of the disease

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Hoehn and Yahr's description of 5 stages of PD:

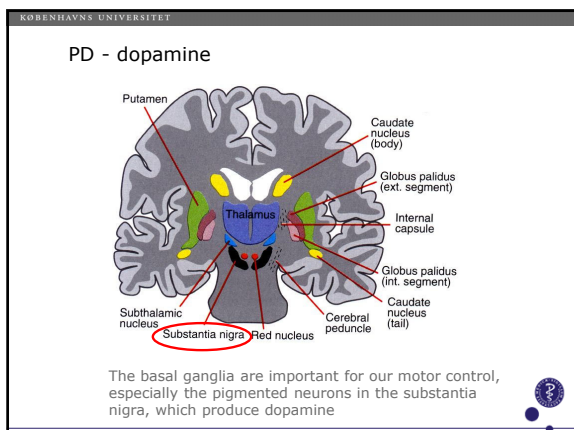
1. stage: The symptoms are unilateral, mild and do not give rise to disability.
2. stage: The symptoms are bilateral and may give rise to mild disability. Balance and gait are affected.
3. stage: General functional impact, which is moderate to pronounced.
4. stage: Pronounced symptoms. Parkinson's sufferers can still walk, but to a limited extent. Muscle stiffness (rigidity) and slow movements (bradykinesia) occur and the person with PD may no longer be able to live alone. Shaking (tremor) may have subsided.
5. stage: Here, the person with Parkinson's needs extensive care.

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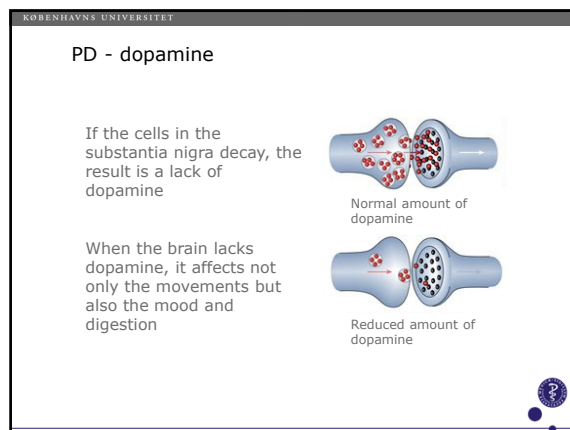
PD - why?

- Degeneration of dopaminergic neurons in the substantia nigra (basal ganglia) → less dopamine (transmitter substance in the nervous system) → less control of the movements → tremor, slow movements and difficulty in starting
- Decay of the dopaminergic cells is related to the formation of the so-called Lewy bodies, which are spherical aggregates of the protein alpha synuclein

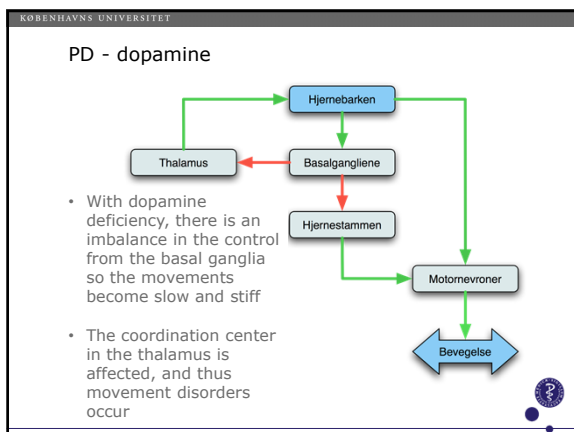
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PD - diagnosis and treatment

- There is no cure, but the most effective medicine to reduce the symptoms of Parkinson's disease is the drug levodopa (L-DOPA)
- Levodopa is converted to dopamine in the brain and helps to replace some of the missing dopamine
- Release of small amounts of dopamine in the brain also gives a diffuse well-being, large amounts give pleasure
- The disadvantages are that the medicine gradually stops working and that there are many side effects, including frequent dry mouth and difficulty swallowing

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PD - treatment and course

- With advanced PD, there are often unpredictable and unpleasant fluctuations in the disease
- This means that shortly after the medication is taken, mobility improves, and shortly before the next medication dosage, stiffness and decreased mobility increase. In addition, involuntary movements are seen shortly after taking the medicine
- Over time, this will happen more frequently. The differences in mobility can come so suddenly that it looks like a "power switch effect" - the problem is then called the "on-off phenomenon"

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PD - treatment and course

Treatment increases with the progression of the disease. Typical forms of treatment are:

- Medical symptomatic treatment (dopamine agonists in tablet form)
- Physical training, voice training, psychosocial support
- Medicine pumps (levodopa / duodopa)
- Injections / pump (apomorphine)
- Operation (Deep Brain Stimulation)

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PD - oral problems

- Muscle stiffness and slow movements, resting tremor and reduced mobility of the jaw, sleep disorders with motor restlessness and "bruxism"
- Chewing, swallowing and speaking difficulties, dysphagia, drooling, retention of food and reduced self-cleaning of the oral cavity
- Medication side effect: involuntary movements of lips and tongue as well as dry mouth

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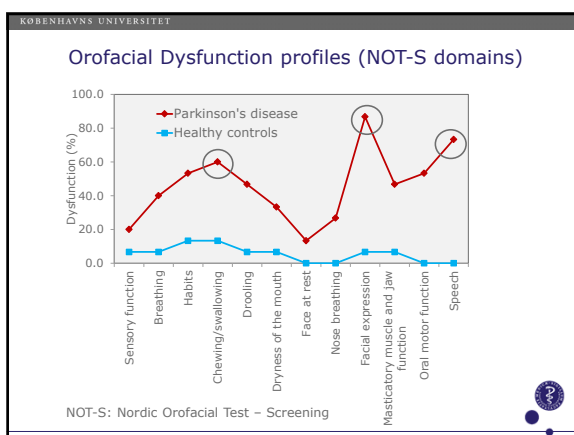
Symptoms and objective findings in 61-82 yr patients with PD (>1-14 yr)
 - significant differences between values from 15 patients and 15 matched controls

Mean values	Patients	Controls
NOT-S (0-12; orofacial handicaps)	5,5	0,7
OHIP (0-196; reduced live quality)	35,2	11,9
Chewing index (0-4; subj. evaluation)	0,9	0,0
Chewing efficiency (gum weight reduction %)	24,0	33,5
Gabeevne (mm)	44,0	58,5

NOT-S: Nordic Orofacial Test – Screening
 OHIP: Oral Health Impact Profile

Bakke et al. Eur J Oral Sci 2011

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Symptoms and objective findings in 15 patients (61-82 yr) with PD (>1-14 yr) correlated with their disease severity

	Hoehn & Yahr
NOT-S (0-12; orofacial handicaps)	0,64*
Chewing index (0-4; subj. evaluation)	0,60*
Oral stereognosis (identification capability)	-0,54*
Oral hygiene (index: 0-3)	0,73*

Hoehn & Yahr: Stage 1-5 of PD severity

Bakke et al. Eur J Oral Sci 2011

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Improvement of oral function in PD

The effect of a home training program

Assessed for eligibility, informed and randomized (33 patients with Parkinson's disease)
 • Excluded due to long travel time to the hospital and/or felt too weak to participate (n=4)

Allocated to Group A (n = 15)	Allocated to Group B (n = 14)
<ul style="list-style-type: none"> • 9 men and 6 women • Median age: 65 y • Median years of Parkinson's disease: 11 • Median modified Hoehn and Yahr staging: 3 • Median UPDRS Part II/III: 16/21 	<ul style="list-style-type: none"> • 6 men and 8 women • Median age: 72 y • Median years of Parkinson's disease: 12 • Median modified Hoehn and Yahr staging: 3 • Median UPDRS Part II/III: 15/29
Session 1—first visit • Information and examination • Instruction in jaw and mouth exercises and individual oral hygiene	Session 1—first visit • Information and examination
Session 2—after 2 mo • Control and examination • Reinstruction in jaw and mouth exercises and oral hygiene	Session 2—after 2 mo • Information and examination • Reinstruction in jaw and mouth exercises and individual oral hygiene
Session 3—after another 2 mo • Control and examination	Session 3—after another 2 mo • Control and examination • Reinstruction in jaw and mouth exercises and oral hygiene

Baram, Karlsborg, Bakke. J Oral Rehabil 2020; 47:370-6.

★ Instruction in training program

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Training with a JawTrainer

Purpose: to increase jaw opening and reduce stiffness in jaw closer muscles


- Place the device between the front teeth
- Press slowly the two ends together until the cheeks begin to tighten but without causing pain
- Keep the pressure for ½ min, rest in ½ min
- Repeat the exercise 10 times a day

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Mastication of Proxident fluoride chewing gum

Purpose: to train chewing and masticatory muscles




- Chew a piece of chewing gum for half an hour (if it is too tiring with a whole piece of chewing gum, start with ½ piece for 15 min, then increase the time and the gum size up to the recommended week by week)
- Repeat the exercise twice a day

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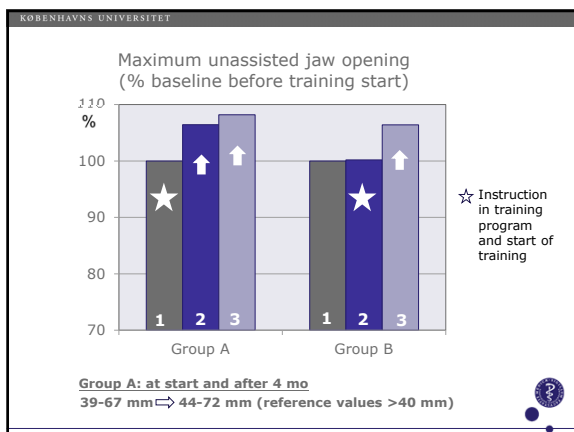
Training with a mouth screen (Ulmer model) Maxi

Purpose: to reduce stiffness of lips and cheeks

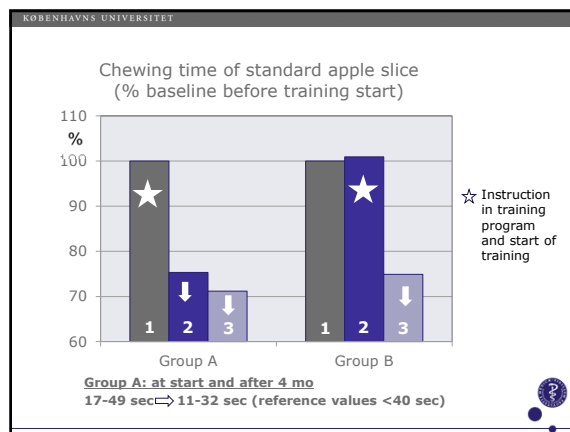


- Place the screen behind the lips in front of the teeth
- Pull in the ring to tighten the lips for 10 sec
- Repeat the exercise ten times a day

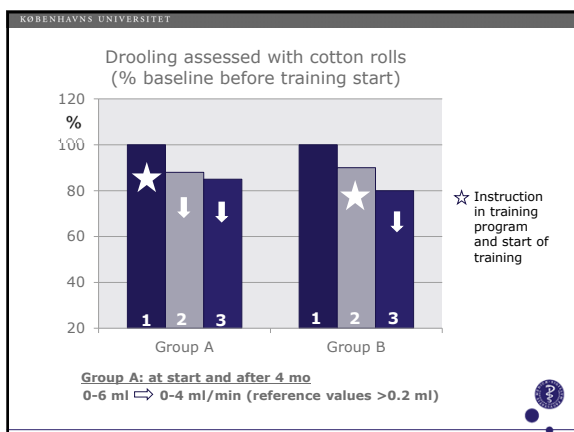
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Conclusion:



- In patients with moderate to pronounced PD simple training methods had a significant clinical effect both after 2 and 4 months
- 83-86 % of the patients trained on an average of 4-5 days per week
- The results are promising despite the progressive nature of PD and may thus postpone aggravation of oral problems

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BAKKE M, LARSEN SL, LAUTRUP C, KARLSBORG M. Orofacial function and oral health in patients with Parkinson's disease. *Eur J Oral Sci* 2011; 110: 27-32.

BARAM S, KARLSBORG M, BAKKE M. Improvement of oral function and hygiene in Parkinson's disease: a randomized controlled clinical trial of the effect of jaw training and oral hygiene instruction. *J Oral Rehabil* 2020;47:370-6.




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Oralmotorisk rehabilitering av vuxna patienter med oralmotorisk dysfunktion

[Mikati Mona, Övertandläkare, Avd för Pedodonti och Sjukhustandvård, Mölndal](#)

<https://www.internetodontologi.se>



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