#### **Physical Activity in Rehabilitation:**

#### the ultimate medicine !?

#### 8-11-2018



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expand REHABILITATION MEDICINE CENTER FOR REHABILITATION



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Other relationship, i.e.: 5	none





#### **Physical Activity in Rehabilitation:**

#### the ultimate medicine:











An ultimate medicine: dream or reality?

# Hygienics: clean drinking water (dr. John Snow)









an ultimate medicine: dream or reality?

# Physical activity:







### Aim of presentation:



• Why is physical activity and sports important in Rehabilitation?



?



Constituent free



#### **Contents:**

- 1. Introduction
  - 1. Evidence
  - 2. Perspective
- 2. PA and sports per rehabilitation phase: EPRMBA, 2018
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#### Introduction: evidence:







# **Evidence:**

- Pandemic Lancet 2016
  - Physical inactivity: more deaths than through smoking
  - 'Sedentary' is the new smoking, not sitting







Physical Activity 2016: Progress and Challenges



"We arge all sectors of government and society to take immediate, hold actions to help make active living a more desired, affordable, and accesable choice for all population groups."

Series by The Love







### **Evidence:**

- Able bodied and physically disabled: <sup>Bouchard 1994,Heath 1997</sup>
  - Exercise = Medicine
  - Physical activity i functional independence puality of life

Exe*R* cise is Medicine

- Fit: better and faster rehabilitation <sup>ACSM, Moore, Durstine, 2016</sup>
- Much evidence







#### Introduction: perspective:



### **Perspective:**



#### WHO:

aime to strengthen public health programs to prevent communicable and noncommunicable diseases, and address risk factors.





- The Netherlands: Focus on prevention Rutte III: government agreement, 2017:
  - National prevention plan









#### **Perspective:**

- Dutch Standard for physical activity (2017):
  - Moderate to severe physical activity, 150 minutes / week
  - Musculoskeletal exercises, > 2 times / week
  - Prevent sitting

- How about the disabled? (concept statement, KCS, 2018)
  - In line with Dutch standard
  - UK Chief Medical Officers' Guidelines 2011 Start Active, Stay Active:
    - www.bit.ly/startactive
  - The more active, the better. Every expression of activity counts.











# **Perspective:**



- Healthy, active life style is important De Medisch Specialist 2025:
  - Based on medical oath: treat the ill, promote health and relieve suffering
  - Ambition 2025: less smoking and alcohol, more physically active
  - (tertiair) Prevention should be an active theme:

The consultant (e.g. rehabilitation physician) discusses life style factors and offers support in optimizing life style

• Challenge: how do they do that?









Revalidatiegeneeskund

2025

#### Revalidatie in 2030 RN, 2017 / Revalidatiegeneeskunde 2025 VRA 2018

- Focus on active / healthy life style: prevention strategies:
  - Primary actions to avoid / remove cause of health problem, before arising
  - Secundary: actions to detect a health problem at an early stage; facilitating cure, preventing long-term effec
  - Tertiary: actions to reduce impact of an already established diisease: restoring function, reducing complications

- Life style / behaviour is no longer without obligation / non-committal
  - Lifestyle interventions integrated in treatment programs and –strategies
  - Irrifutable proof: pa and sports works!





# introduction: in conclusion:

- Evidence
- Intention
  - Plans

However:

#### How to implement in your daily clinical practice?





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# 2.1: Pre-rehabilition: Case

- 51 year old women
  - living in a small village
  - divorced,
  - on welfare benefits
  - Leading an inactive life style
  - obese
  - Recently diagnosed: DM type II (on medication)
- Benefits of active life style?
  - Fight DM
  - Prevention of secundary problems emerging from DM
- How to support?
  - Primary care (GP, PT, dietician)
- Role of Rehabilitation Medicine?









# 2.1: Pre-rehabilition:

- How to implement in your daily clinical practice?
  - Primary prevention?
  - Role for rehabilitation medicine?
  - Examples:
    - Better in better out: total hip and total knee operations:
      - Preoperative training: better results (Santa Mina et al, 2014)
    - Cardiac rehabilitation:
      - Good results following pre-rehabilitation<sup>Warburton et al, 2006</sup>
    - Amputation:
      - Difficult to achieve: (Hijmans et al 2018, Dekker, et al, 2018)

RESEARCH ARTICLE

Pre-operative rehabilitation for dysvascular lower-limb amputee patients: A focus group study involving medical professionals

Rienk Dekker 🖯 👯 Yoanna V. Hristova<sup>24</sup>, Juha M. Hijmans<sup>1</sup>°, Jan H. B. Geertzen <sup>1</sup>°

1 University of Groningen, University Medical Center Groningen, Department for Rehabilitation, Groninge The Netherlands, 2 University of Groningen, Faculty of Medicine, Groningen, The Netherlands

• Conclusion: Limited role and involvement Rehabilitation Medicine





# 2.2: Acute phase (hospital setting): Case:

- 4 years later, the now 55 year old women, still living at home:
  - active life style  $\downarrow$
  - GP; Emergency house call: stroke?
  - Hospital, admitted to stroke care unit.
  - During this admission: early mobilization





# 2.2: Acute phase (hospital setting):

- How to implement PA in your daily clinical practice?
  - Emphasis on early mobilisation<sup>Stam et al 2012</sup>
    - Prevent complications
    - Improve function and activities
  - Example:
    - Physiotherapy UMCG
    - Hydrotherapy intensive care patients





- Being as fit as possible: requirement for admission for Rehabilitation
- Conclusion: several posibilities to implement PA!





# 2.3: Physical activity in post acute or rehabilitation phase: Case:

- 11 days later (55 year old stroke patient)
  - transfer to the rehabilitation center:
  - Goals:
    - Perform her household activities independently
    - being able to walk for a mile to visit relatives
  - During intake: integrated in rehabilitation process: physical activity and sports.





# 2.3: Physical activity in post-acute or rehabilitation phase:

- Background: moderate or high-intensity exercise:
  - $\downarrow$  risk of secondary ischemic or hemorrhagic stroke <sup>Furie et al, 2011, Lee et al, 2012</sup>
  - 1 walking speed, functional mobility van der Port et al, 2007, English et al, 2010, Brazelli, 2011
  - ↑ muscle strength, and bone density Pang et al, 2006
  - ↑ quality of life <sup>Carin-Levy et al, 2009</sup>





# Physical activity (PA) in post-acute or rehabilitation phase:

- In short:
  - cardiorespiratory exercise: disability  $\downarrow$  after stroke
- However:
  - stroke  $\rightarrow$  complex disability: participation in physical activity = difficult

- Therefor:
  - How to implement PA in post-acute rehabilitation?





# How to implement physical activity in post-acute rehabilitation:

- Related to treatment goals:
  - What does the patient want to achieve?

- Physical fitness<sup>†</sup>:
  - Means : to support rehabilitation process
  - Target : participation goal





# Implement physical activity in post-acute rehabilitation: Means

- - Support rehabilitation process
  - An number of protocols available
    - (applied: Heliomare, Blixembosch, Hoogstraat, Arnhem, Amsterdam UMC, UMCG, etc.)
  - Example: Module Physical Activity and Sport, CvR, UMCG
    - See: website Revalidatie.umcg.nl see: Banner Actieve leefstijl







Protocol Physical Activity and Sports: incorporated in rehabilitation program: Module Physical Activity and Sport, CvR, UMCG

- Physical activity module: test-train-test-procedure.
  - Safety first: contraindications?
  - Procedure:
    - ECG
    - History (diagnosis / co-morbidity / medication)
    - Physical
  - Aim of testing:
    - Contraindication for training / sports participation?
    - Determination of starting level
    - Progress?







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Protocol Physical Activity and Sports: incorporated in rehabilitation program: Module Physical Activity and Sport, CvR, UMCG

- Test procedure:
  - Muscle function testing
  - Determination body composition



• Maximal exercise test







# Maximal exercise test

(CvR: 1600 / year)

- Physical test to measure aerobic capacity
- Testing until exhaustion
- On ergometer: bicycle, tredmill, arm ergometer













# Fitnessprotocol:

- Test result: determine level of training program
  - Aim: achieve fitness levels, needed for reaching rehabilitation goals
- Training: 3 x / week, 30 minutes
- When stamina / muscle function  $\uparrow$ : load  $\uparrow$
- After 9-12 weeks, re-test: improvement?





# Implement physical activity in post-acute rehabilitation: Target: participation

- PA and sports as a participation goal:
  - Finding suitable pa or sports activity
  - Maintaining active life style

- Option:
  - Counseling Program
    - » Rehabilitation Sports and Exercise
    - » Website: www.respact.nl

**BMJ Open** Protocol of a longitudinal cohort study on physical activity behaviour in physically disabled patients participating in a rehabilitation counselling programme: ReSpAct

Rolinde A Alingh,  $^{1,2}$  Femke Hoekstra,  $^{1,2}$  Cees P van der Schans,  $^{2,3}$  Florentina J Hettinga,  $^4$  Rienk Dekker,  $^{2,5}$  Lucas H V van der Woude $^{1,2}$ 





# Implement pa in post-acute rehabilitation: in conclusion:

• Adequate programs available to enhance physical fitness

• Protocols available for stimulating participation in PA and sports





# 2.4: Rehabilition in chronic phase: Case:

- 2 years later, 57 year old, living at home
- Gradual decline
- Aim:
  - live independently
  - Being able to vistit friends and relatives
  - Continue active lifestyle





# 2.4: Rehabilition in chronic phase: continue active life style:

- Options from Rehabilitation Medicine perspective:
  - Continued outpatient contacts / office hours:
    - Reffered by GP
    - Apply activity tracking
    - Guidance through physical activity and lifestyle counselor
    - Invite for attending patient meetings
    - E-contacts
    - Personal Health Record (in Dutch: PGO: e.g.: Ikdus)









- Activity-coach+
  - Community based, effective
  - Supported by rehabilitation center
  - Target population: hard-to-reach physically disabled people
  - Methods:











Information? Website: Revalidatie.umcg.nl (Banner Actieve leefstijl)





University Medical Center Groningen

**BMJ Open** Development of an intervention to stimulate physical activity in hard-toreach physically disabled people and design of a pilot implementation: an intervention mapping approach

Leonie A Krops,<sup>1</sup> Rienk Dekker,<sup>1,2</sup> Jan H B Geertzen,<sup>1</sup> Pieter U Dijkstra<sup>1,3</sup>

# PA and sports per rehabilitation phase in conclusion:

- Pre-rehabilitation
- Acute phase
- Post-acute or Rehabilitation phase
- Long-term or Chronic rehabilitation phase





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- How to motivate physicians to apply E=M?
  - "The consultant (e.g. rehabilitation physician) discusses life style factors and offers support in optimizing life style"



- Possible sollution:
  - Physicians Implement Exercise = Medicine (PIE=M)
  - Research project (2018-2020), funded by ZonMW
  - Outcome:

Development of a tool (algorythm) to assist clinicians to provide a tailored E=M prescription

- Individual patient characteristics
  - Existing big data systems
  - Recent scientific evidence

Interested? Website: Revalidatie.umcg.nl (Banner Actieve leefstijl)











- How to implement a test- and trainprocedure in my institution?
  - Option: "8-step-model" (more or less in random order)
    - Step 1: Involve right parties / disciplines
    - Step 2: Develop vision / anchor vision in strategic plans institution
    - Step 3: Arrange and secure safety measures
    - Step 4: Employ and educate adequate staff
    - Step 5: Install infrastructure and equipment
    - Step 6: Commited team members
    - Step 7: Develop cost-effective procedure
    - Step 8: Secure planning and logistics
  - More information ?
    - Parallel session A-B Workshop 2





- How to make patients more aware of the importance of active life style?
  - Create awareness = starting point
  - Option: Life style check UMCG
    - Anonymous, free, voluntarily, short-term
    - Pilot = encouraging: 75% awareness  $\uparrow$
    - Personalised tailored advice
    - Following outcome questionnaire and basic measurements
    - Involment of a life style consultant





Information? Website: Revalidatie.umcg.nl (Banner Actieve leefstijl)









• Lack of information and specific knowledge?



- Education / courses:
  - Regular courses VRA: (in Dutch): Februari 14/15, 2019.
  - Several specific courses:
    - Residents: "etalagestage pa, sport and rehabilitation UMCG"







- How to enhance sustainability of an active lifestyle?
  - A real challange! Lai , Rimmer, et al, 2018, Duncton 2018, Bussmann 2018
    - Insufficient knowledge on behavioural factors
    - Effects of pa-stimulating programs: often short-term Dunton, 2018
  - Solutions:
    - Early guidance PA in home situation
    - Early transition: center based  $\rightarrow$  community based rehabil
    - Activity-Coach+ Krops et al, 2018
    - Politics: fight social inequality Scott Burris, 2018











### Physical Activity in Rehabilitation: an ultimate medicine !?

Scientific proof Intentions / plans Best practices Conquerable challenges

Physical Activity in Rehabilitation = example of an ultimate medicine!







# Physical activity in rehabilitation medicine:











# Physical activity in rehabilitation medicine:





Interested?





