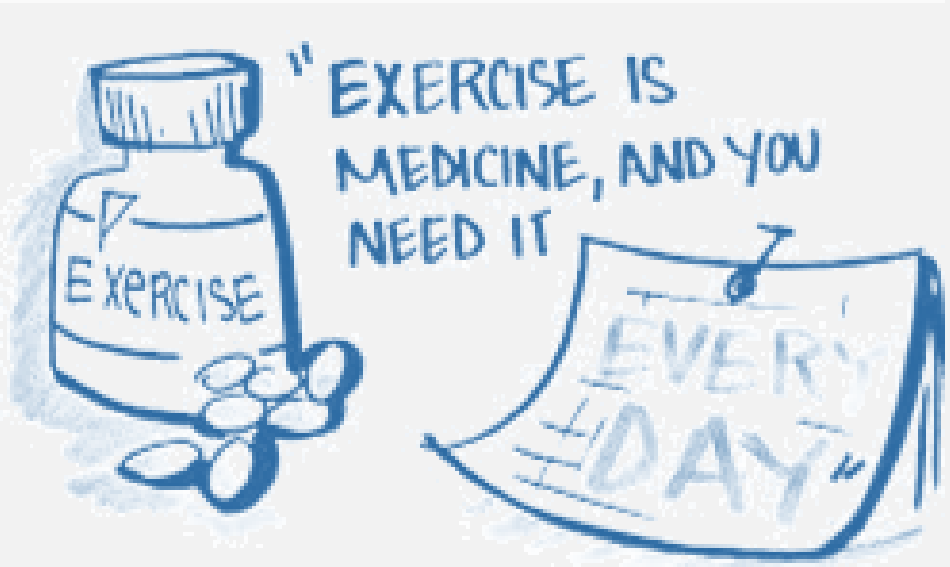
Exercise in Kidney Care Clinic Patients



Start prescribing it….

Megan Borkum | Home dialysis fellow

KCC education session I 28th October 2022

Disclosures

- No financial disclosures

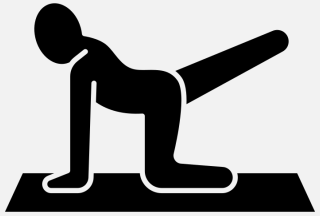
- I am not an exercise professional or exercise scientist

Learning points

- Review recent literature on the therapeutic role of exercise in CKD.
- Current recommendations for exercise/ physical activity in CKD
- Discuss the role of the kidney healthcare team
- Understand common barriers to implementing exercise programs for individuals with CKD
- Practical examples of exercise prescription and ways to engage patients meaningfully

PHYSICAL ACTIVITY

EXERCISE

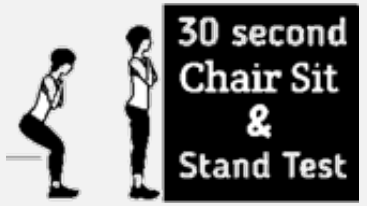


CARDIO-RESPIRATORY FITNESS

Commonly used outcome measures

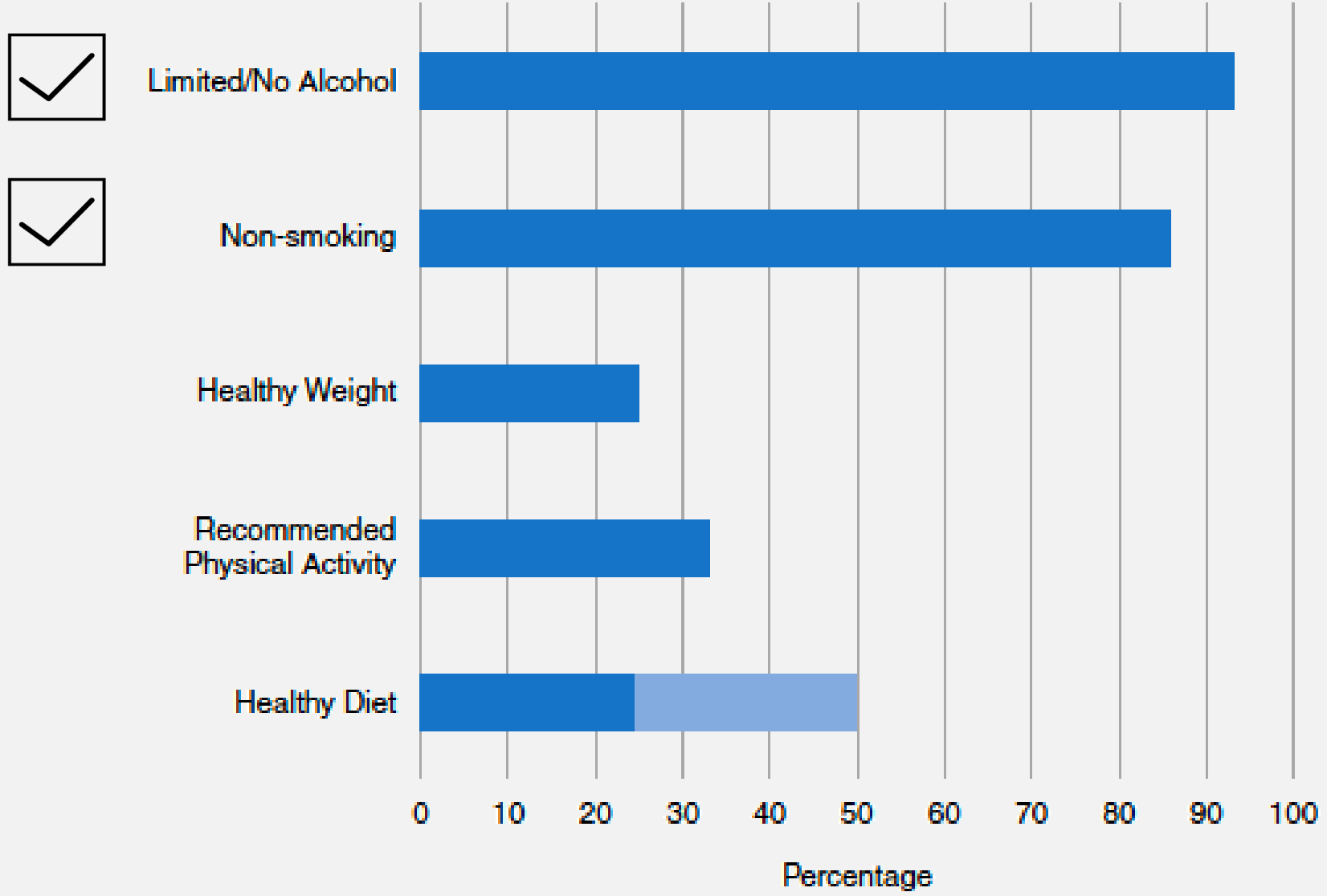
HANDGRIP STRENGTH

6-MINUTE WALK TEST



30-SECOND SIT-TO-STAND TEST

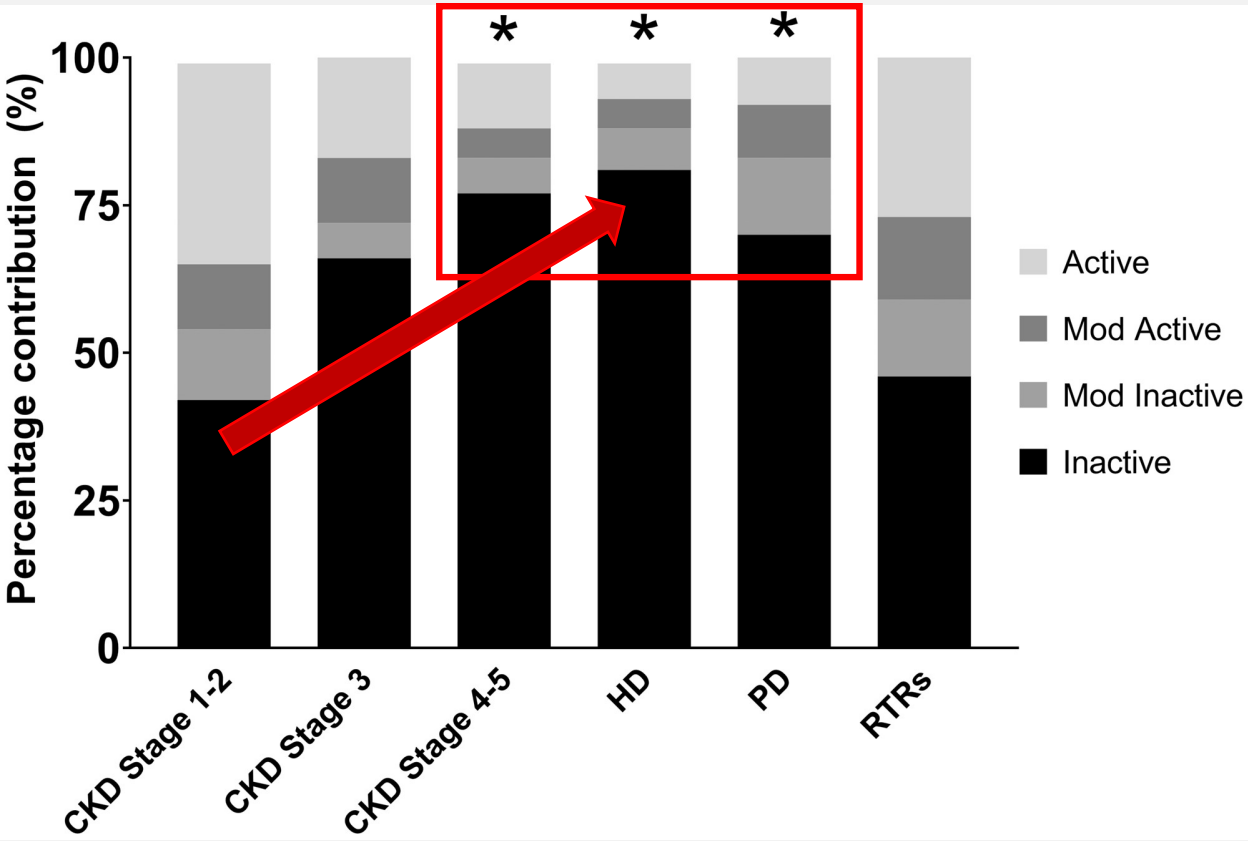
QUALITY-OF-LIFE AND SYMPTOM ASSESSMENT TOOLS



LIFESTYLE behavior prevalence in CKD patients

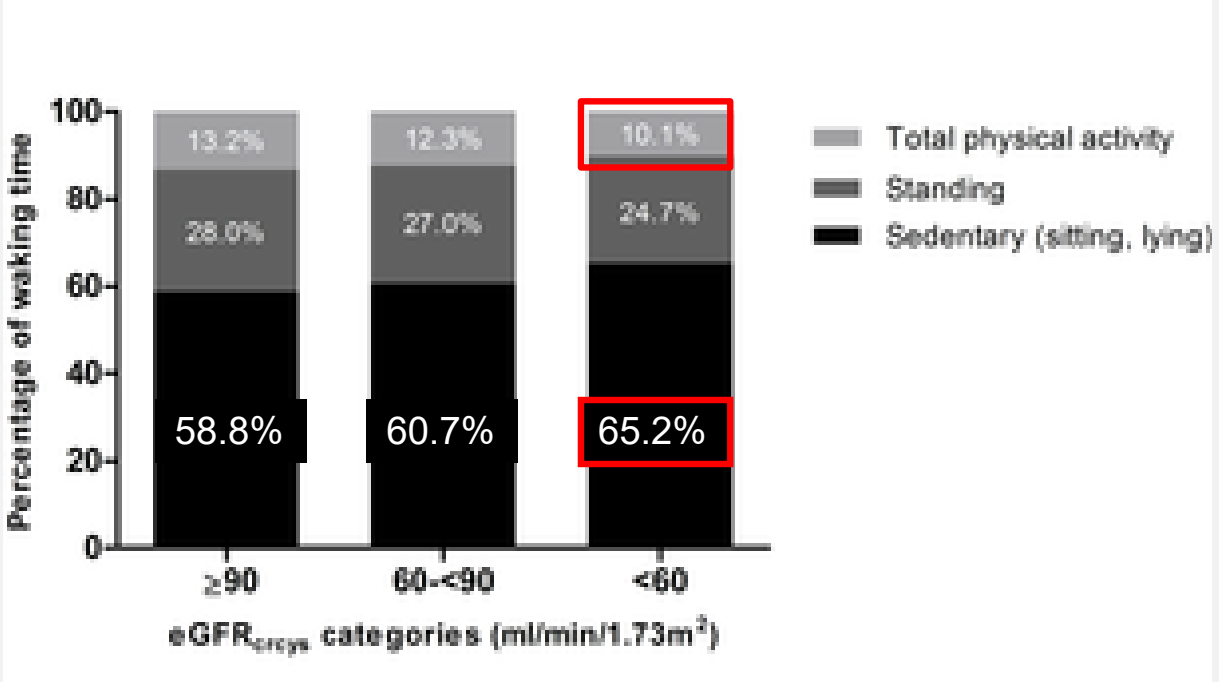
Schrauben et al. Kidney360. 2022

How physically active are CKD patients?



- The majority of those living with a kidney condition are physically **inactive**

- In those with advanced disease, **~10%** meet current physical activity recommendations



- **65%** of waking time is spent sedentary

Wilkinson et al. NDT. 2021
Martens et al. PLOS One. 2018

In patients with advanced CKD, was transition to dialysis associated with accelerated decline in physical activity and function?

CJASN
Clinical Journal of the American Society of Nephrology

Methods

Canadian Frailty Observation and Interventions Trial (CanFIT)

n = 386 Advanced non-dialysis CKD <30mL/min/1.73m²

n = 162 Progressed to dialysis

Median follow-up time between assessments

427 days — Advanced nondialysis CKD group

606 days — Progressed to dialysis group

Measures of Physical Activity

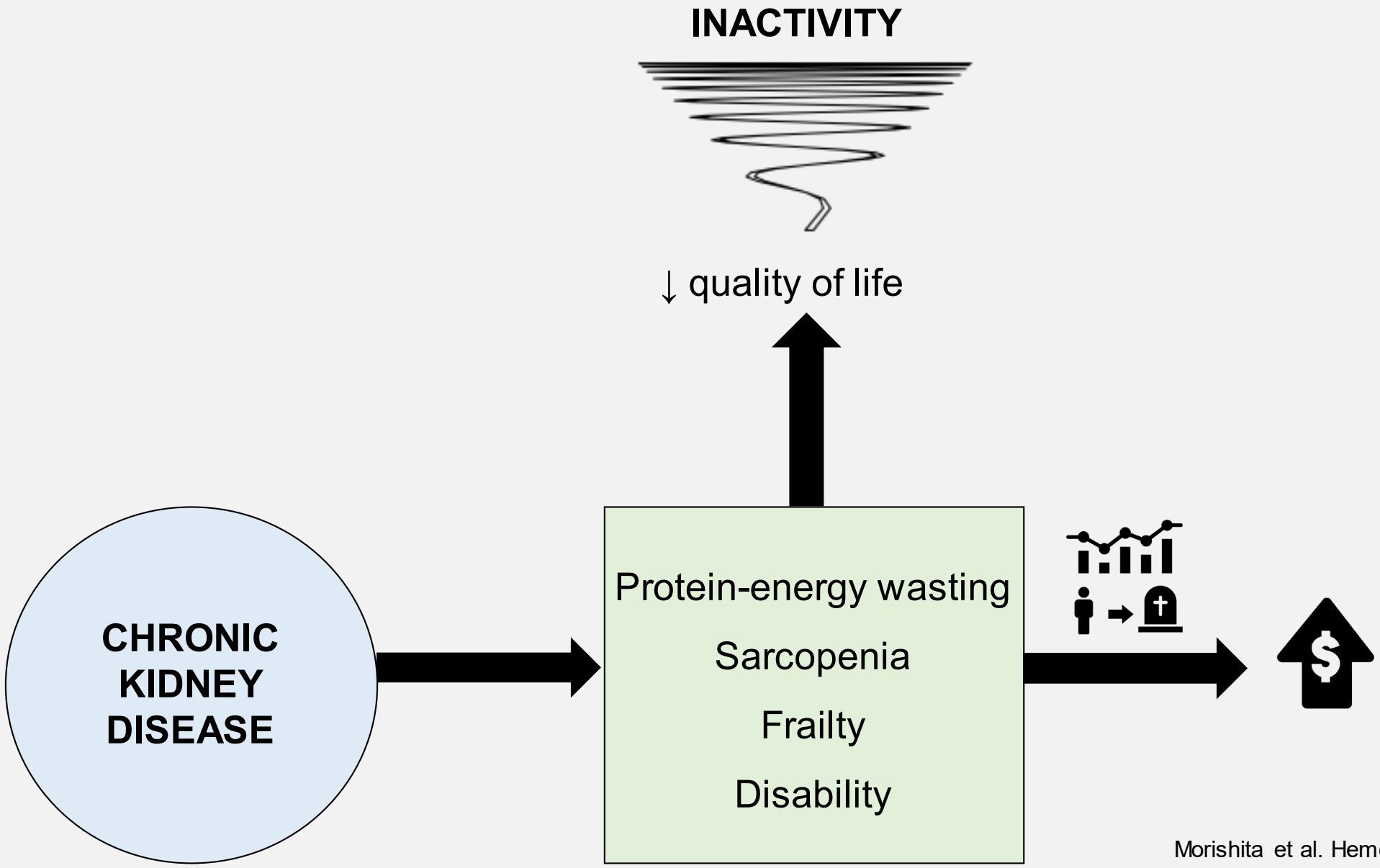
- **Physical activity scale for elderly (PASE) questionnaire**
- **Chair stand test (seconds)**
- **4-meter gait speed (seconds)**
- **Grip strength (kg)**

Mean change (95% CI) in scores from baseline to follow-up

	Advanced Non-dialysis CKD	Progressed to Dialysis	
Physical activity scale for elderly (PASE) questionnaire	-15.0 (-23.2, -6.9)	-23.2 (-34.2, -12.2)	
	Adjusted difference -10.5 (-27.7 – 6.8)		P=0.2
Chair stand test (seconds)	3.3 (1.3, 5.3)	8.9 (5.5, 12.3)	
	Adjusted difference 5.2 (0.8 – 9.7)		P=0.02
4-meter gait speed (seconds)	0.6 (0.3, 0.8)	0.7 (0.3, 1.0)	
	Adjusted difference 0.2 (-0.3 – 0.7)		P=0.4
Grip strength (kg)	-0.06 (-0.8, 0.6)	-1.0 (-2.0, -0.01)	
	Adjusted difference -0.3 (-1.8 – 1.2)		P=0.7

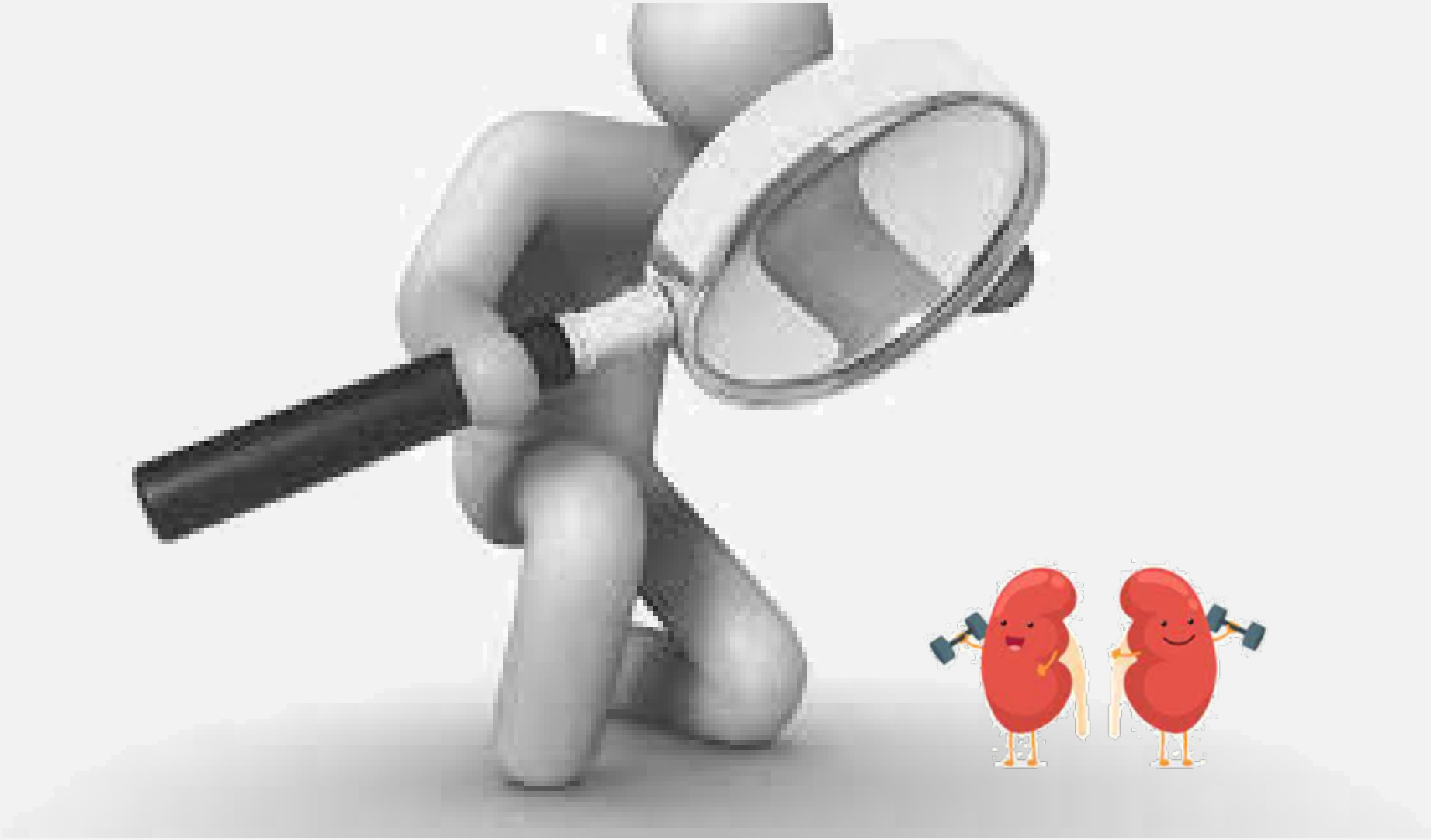
Conclusions: Patients with advanced CKD experience declines in physical activity and function over time. Progression to dialysis is associated with accelerated decline in physical function as measured by chair stand test.

Christie Rampersad, Joseph Darcel, Oksana Harasemiw, et al. ***Change in Physical Activity and Function in Patients with Baseline Advanced Nondialysis Chronic Kidney Disease***. CJASN doi: 10.2215/CJN.07050521. **Visual Abstract by Aakash Shingada, MD**

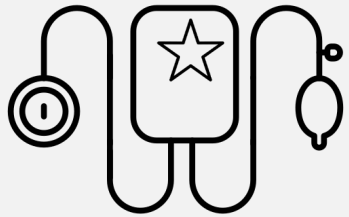


Morishita et al. Hemodial int. 2017.
Watson et al. Clin Physiol Funct Imaging. 2020

Evidence for the role of exercise in outcomes relevant to CKD???



1) BP



-11mmHg systolic
after 24-36 weeks

Systematic review	Exercise versus control (SBP mmHg) 95%CI
Thompson 2019	-4.33 (-9.04, 0.38)
Zhang 2019	-5.61 (-8.99, -2.23)
Van den Wyngaert 2018	1.22 (-4.45, 6.90)
Yamamoto 2021	-0.75 (-1.24, -0.26)
Villanego 2020	-1.68 (-6.80, 3.44)

2) ?CKD progression

- ~ 6 systematic reviews - **conflicting findings**

- Short duration, inappropriate statistical analyses, non-measurement of true renal function

☆ However, **no harm** to GFR ☆

COULD IT WORK?

- Anti-inflammatory effect

- Decreased sympathetic nervous activity

- ↓ oxidative stress

Viana et al. J Am Soc Nephrol. 2014
Gleeson et al. Nature Rev Immunol. 2011.
Yuhei Otobe et al. Nephrology. 2019.

3) ?Mortality + hospitalization

Research is limited in quality and consistency

Peng et al. BMC Nephrology (2019) 20:142
https://doi.org/10.1186/s12882-019-1309-y

BMC Nephrology

RESEARCH ARTICLE Open Access

Self-management interventions for chronic kidney disease: a systematic review and meta-analysis

Suyuan Peng[1,2], Jiawei He[3], Jiasheng Huang[1], Longwei Lun[4], Jiahao Zeng[1], Shan Zeng[1], La Zhang[6,7], Xusheng Liu[4] and Yifan Wu[5*]

4) Muscle (mass) + strength, physical function physical capacity

Muscle-kidney crosstalk

Zelle DM, et al. Nature Reviews. 2017

Kosmadakis et al. NDT. 2012.
Zhou et al. NDT 2019

Villanego et al. Nefrología. 2020
Yamagata et al. Ren Replace Ther. 2019.

Wu et al. Clin Rehabil. 2020
Wyngaert et al. PLoS One. 2018
Zelle DM, et al. Nature Reviews. 2017
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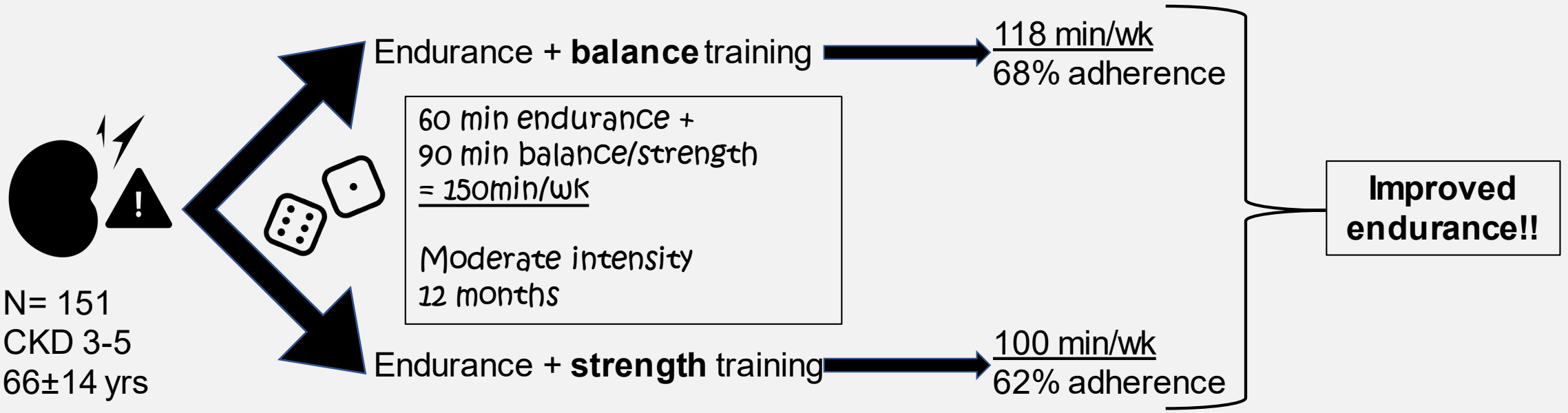
Randomized Controlled Trial of Exercise in CKD—The RENEXC Study

Kidney Int Rep (2019) 4, 963–976; https://doi.org/10.1016/j.ekir.2019.04.001

Matthias Hellberg[1,2,3], Peter Höglund[2,3,4], Philippa Svensson[1,2,3] and Naomi Clyne[1,2,3]

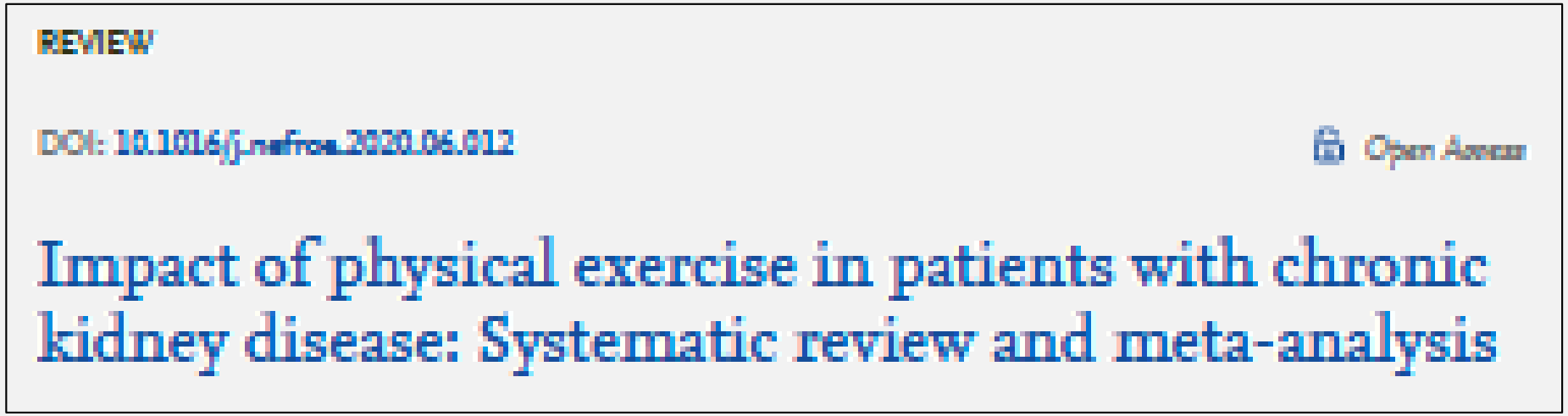
[1]Department of Nephrology, Institution of Clinical Sciences Lund, Lund, Sweden; [2]Faculty of Medicine, Lund University, Lund, Sweden; [3]Faculty of Medicine, Skåne University Hospital, Lund Sweden; and [4]Department of Clinical Chemistry and Pharmacology, Institution of Laboratory Medicine Lund, Lund, Sweden



5) Health-related quality of life

Physical **inactivity** is associated with ↓ **quality of life.**

There is strong evidence from hundreds of studies that **exercise** improves components (physical, social, psychological) that **improve QOL.**


REVIEW

DOI: 10.1016/j.nefroa.2020.06.012

Open Access

Impact of physical exercise in patients with chronic kidney disease: Systematic review and meta-analysis

Villanego et al. Nefrología. 2020

THE RENAL ASSOCIATION
founded 1950

Clinical Practice Guideline
Exercise and Lifestyle in Chronic Kidney Disease

1 A

We recommend that increasing physical activity or exercise levels in non-dialysis CKD patients will contribute to the following:

- Improvements in blood pressure (1B).
- Improvements in physical function and capacity (1B).
- Improvements in functional limitations (1C).
- Improvements in health-related quality of life (1C).

We suggest that exercise may improve mental well-being, e.g. symptoms of depression and anxiety (2C).

2 D

Freely available from UK Kidney Association : ukkidney.org

Barriers

PATIENTS	PHYSICIANS AND UNIT STAFF
Fear of injury *No support* *Cost* ***Fatigue*** *Transportation* *How? What?* *Need exercise companion* ***Weakness*** ***Shortness of breath***	***No time*** ***Too busy*** *Fear of injury* *How? What?* ***No expertise*** *Sedentary culture* *Low priority* *Patients not interested*

Themes:

- Knowledge, skills, expectations
- Human, material and logistical resources
- Social dynamics of the unit

Thompson et al. CJASN, 2016
Jhamb et al. BMC Nephrol. 2016

‘Renal’ rehabilitation (internationally)

- Japanese society for renal rehabilitation
- Exercise and Sports Science Australia: integrating exercise physiology into the management of patients with renal disease.
- NHS programs- UK

Hoshino et al. Nutrients. 2021.

Where exercise professionals could fit into KCC

CONSULTATION AND COUNSELLING

Mobility and balance issues,

Fall prevention,

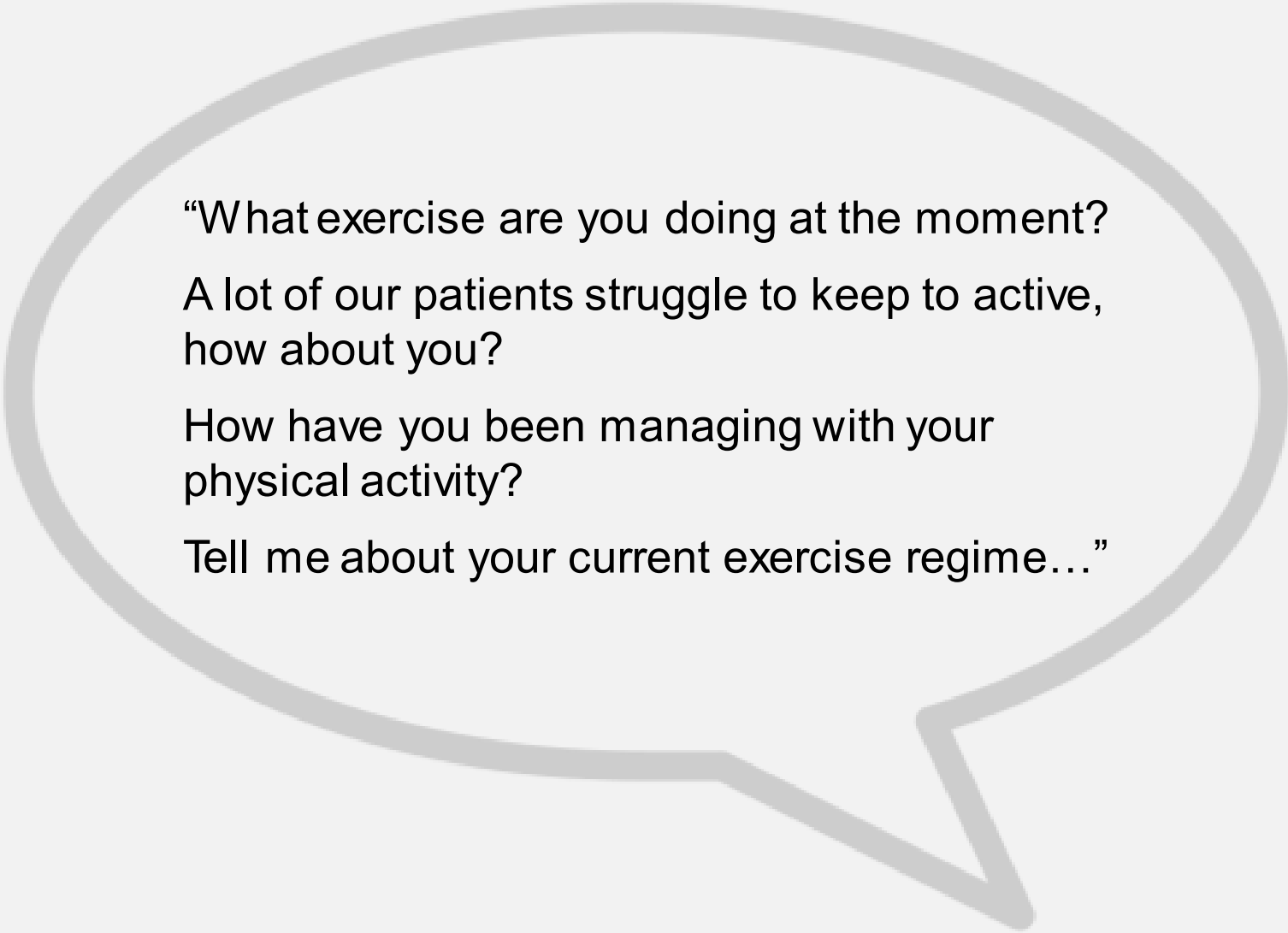
Pain management,

Weight management

Self-management strategies

Home exercise programs

Opening the exercise conversation…



"What exercise are you doing at the moment?

A lot of our patients struggle to keep to active, how about you?

How have you been managing with your physical activity?

Tell me about your current exercise regime…"

How much exercise should we be doing? Intensity?

150 min /week

≥ 2 days /week

Aerobic + strength/resistance training is important!

When exercising remember FITT-VP!

Frequency- how often

Intensity- how much effort

Time- how long

Type- type of exercise

Volume- total exercise amount

Progression- keep going

Sing- talk test

Where to start???

Walking

Swimming

Tennis

Rowing

Golfing

Cycling

Dancing

Tai chi

The **CUBII app** is on the Apple app store and Google play...

Behavior

MAKING HABITS STICK:

- **Easier** - start small
- **Obvious** - stack it with something else you do and make it part of your routine
  (e.g. after breakfast I will pedal for 10min)
- **Attractive** - I will use my elliptical peddler while watching TV.
- **Satisfying** - track progress towards goals!

SETTING SMART GOALS:

- **S**pecific
- **M**easurable
- **A**ttainable
- **R**elevant
- **T**ime-bound

'As a start, I would like to use my bike twice a week for 5-10 min each time for the next 2 weeks.'

EXERCISE RESOURCES FOR KIDNEY CARE

fraserhealth · Providence Health Care · Vancouver Coastal Health

Goal setting… start slowly and build up your routine

PRESCRIPTION

Exercise is medicine

Moderate-intensity aerobic activity	Muscle-strengthening activity
At least **150 min** a week	At least **2 days** a week
Anything that increases your heart rate	e.g. Light weights, resistance band exercises

If you prefer vigorous-intensity activity like running aim for at least **75 min/ week.**

Walk, run, dance…

BCRenal

Monthly membership to access **recorded and live exercise classes** taught by kidney-specific physiotherapists.

beam

Resources for **strength training**

GREX Global Renal EXercise

GREX: global renal exercise network
Research and innovation in the area of physical activity + exercise participation in people with kidney disease.

Aches and pain?
Check out Bob and Brad – "The Most Famous Physical Therapists on the Internet" – Videos that teach you how to manage aches + live a healthier life.

Tips for **staying active**…
Kidney foundation of Canada

kidney FOUNDATION

Light exercise at home?
Manitoba renal program
Kidney fit video series:

kidney health.ca
manitoba renal program

Tips for staying active…
Kidney foundation of Canada

https://kidneywellnesshub.ca/staying-active-index.

kidneywellness hub

JOIN UP NOW

Home | About Us | Newly Diagnosed | Staying Active | Eating Well | Mental Wellbeing | Socially Connecting | Education & Resources | For Health Partners

Staying Active Links

Canadian 24-hour Movement Guides – Canadian Society for Exercise Physiology (CSEP)

Cycling on Dialysis – SOS Medical Foundation

Physical Well-Being – My Kidneys My Health

Mental Wellbeing Links

Anxiety – BC Renal

Bounce Back – Canadian Mental Health Association

Canadian Association of Music Therapists

CKD and Mental Health Webinar *(previously recorded)* – Kidney Foundation

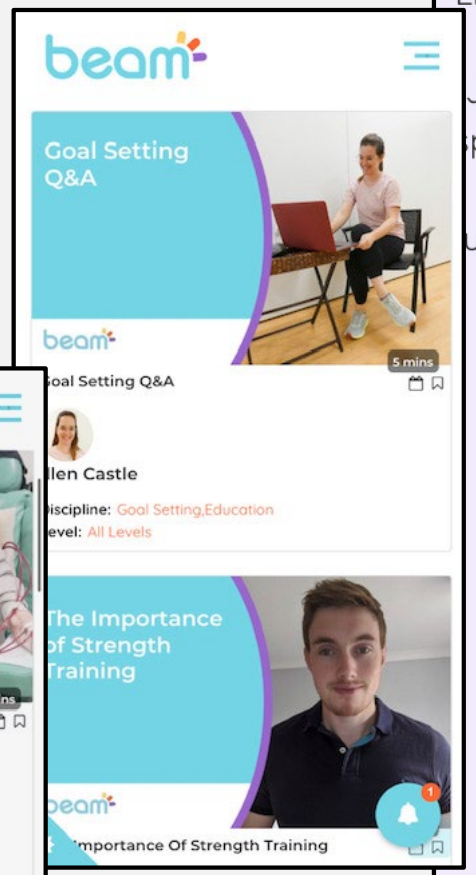
Eating Well Links

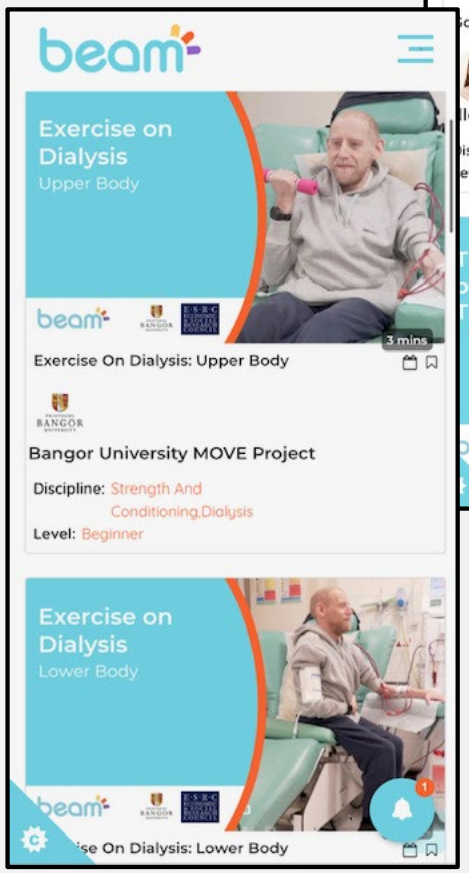
CKD Food and Diet – My Kidneys My Health

Grocery Shopping for your Kidney Diet – BC Renal

Healthy Eating Guidelines for People with Early Chronic Kidney Disease – Heath Link BC, Ministry of Health (available in English, Chinese, Farsi, French, Korean, Punjabi, Spanish, and Vietnamese)

Kidney Community Kitchen – Information and Tools to Help You

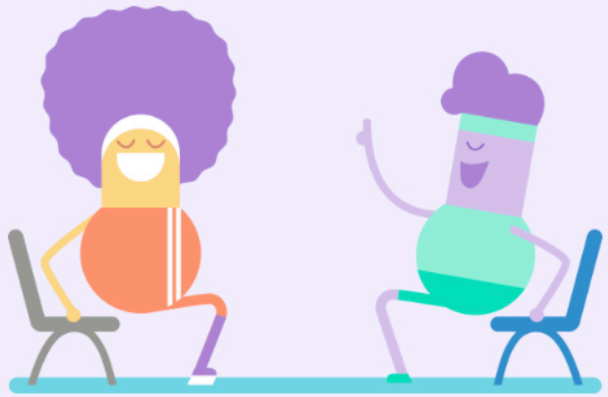




Live exercise classes

Live classes allow you to experience the feel-good energy of a live class wherever you are.
Just like our on-demand sessions, live classes are run by specialist physiotherapists and instructors who share your medical condition. We want you to know that they understand you and they've got your back, every minute of every workout.

Learn more



Monthly membership to access **recorded and live exercise classes** taught by kidney-specific physiotherapists.

beam

12 Week Renal Rehab Program

35 Classes

Start Program

Who is it for? Anyone who wants to move more & deepen their knowledge & management of their kidney disease.

Aim: To build strength, knowledge & confidence through a 12-week progressive program in...

Read more

Learn more

GREX

Global Renal EXercise

GREX: global renal exercise network

Research and innovation in the area of physical activity + exercise participation in people with kidney disease.

https://grexercise.kch.illinois.edu/

LEICESTER KIDNEY LIFESTYLE TEAM

Strength Training Resources

‘Do it with me’ session videos

Click on the buttons to view

BEGINNER SESSION I

BEGINNER SESSION II

INTERMEDIATE SESSION I

EQUIPMENT FREE SESSION

ADVANCED SESSION I

ADVANCED SESSION II

Resources for **strength training**

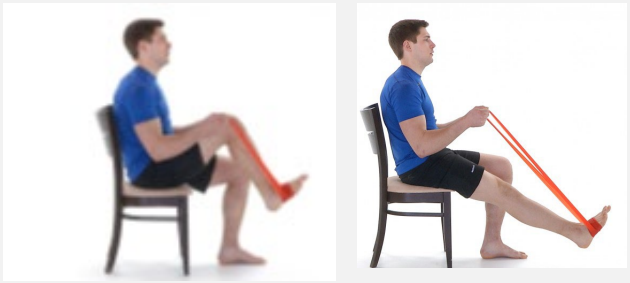
GENERAL HOME STRENGTHENING EXERCISES

1-5) Sets:1-3 / Repetitions:10-15x / Frequency: 2-3x week / Rest:60 seconds between sets
6) Sets:1 / Repetitions:4-6x / Frequency: Daily

1) Chair Squat: Slowly sit down in chair, and then stand up by "powering up" through the legs. Stop if you feel pain in your knees. It is normal to feel fatigue in your thigh muscles.

BENEFITS: Leg strength improvements, fall prevention

2) Seated Leg Press: Sit upright in a chair. Bend your knee toward you and loop your band around your foot. Hold both ends of the band in your hands and then straighten your leg. Slowly return to start.



BENEFITS: Improves leg strength, knee stability

3) Seated Hip Abduction: Sit down on a chair with a band tied/wrapped above your knees. Make sure the band is taut before starting. Pull your knees out to open your legs against the band with your feet planted on the floor. Return to start.

BENEFITS: Strengthens and stabilizes hips, core.

4) Upper Back Squeeze: Keep back straight and abs tight. Keep arms straight at shoulder level, gently pull the band apart and "squeeze" your shoulder blades together. Slowly return back to start maintaining tension in the band.

BENEFITS: Strengthens the upper back muscles, improves posture, ↓ neck pain and headaches.

5) Chest Press With Elastic: Stand straight/ sit in chair and place a band around your upper back. Bend your elbows so your hands are close to your shoulders and hold the band in each hand. Extend your elbows pulling the band. Slowly bend your elbows to return to the start.

BENEFITS: Strengthens chest, shoulders and arms

6) Transverse Abdominals Contraction: You can lie in bed or sit in a chair. Draw your stomach "into your spine", keeping your low back in a neutral position and breathe as you hold the contraction. Hold for 10-15 seconds.

BENEFIT: strong core, ↓ low back pain.

VIDEO DEMO. OF THE EXERCISES

Adapted with gratitude from Alberta Kidney Care- Photo credit to Physiotec

Maintaining motivation

Support

- Doctors & nurses
- Family/ friends/ peers

Facilities/ equipment

Enjoyment

- Varied & enjoyable programme
- Group participation?
- Games

Regularly organized

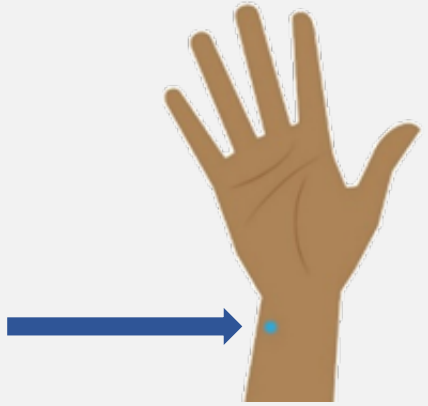
- Plan
- Arrange with friends

Monitor progress

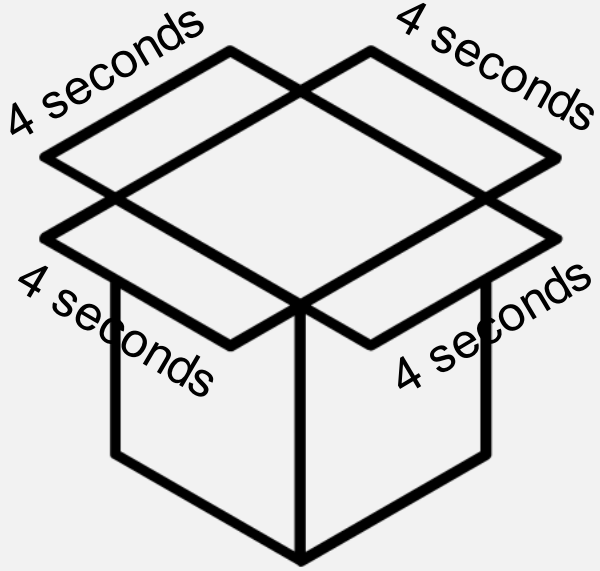
- Fitness tests/weight tracking
- Progress charts
- Goals
- Rewards

Self-management tools…

Can't sleep: self-acupressure technique.
Rub the area shown with firm thumb pressure for 2 minutes.
The location is just below your wrist crease and you will rub the area between the tendons.



Stress and anxiety, worked up?:
Try 1 minute of **"Box Breathing".**
4 seconds of inhaling,
a 4-second hold,
followed by 4 seconds of exhaling,
and finally another 4-second hold.
(This is how you are essentially outlining a box!)



Take home message(s)

Physical activity is important for all kidney patients

Physical activity can improve quality of life

Any movement is good

There are multiple helpful online resources to share with your KCC patients

THE BEST EXERCISE IS ONE YOU ENJOY AND DO REGULARLY

Development of a Curriculum to Train Exercise and Healthcare Professionals to Implement Exercise Programs in CKD

[INFO14]

November 03, 2022 | 10:00 AM - 12:00 PM

Location: Exhibit Hall, Orange County Convention Center, West Building

Effect of a 3-Year Lifestyle Intervention on Cardiac Parameters in People With CKD: Sub-Study of a Randomized Controlled Trial

[TH-PO606]

November 03, 2022 | 10:00 AM - 12:00 PM

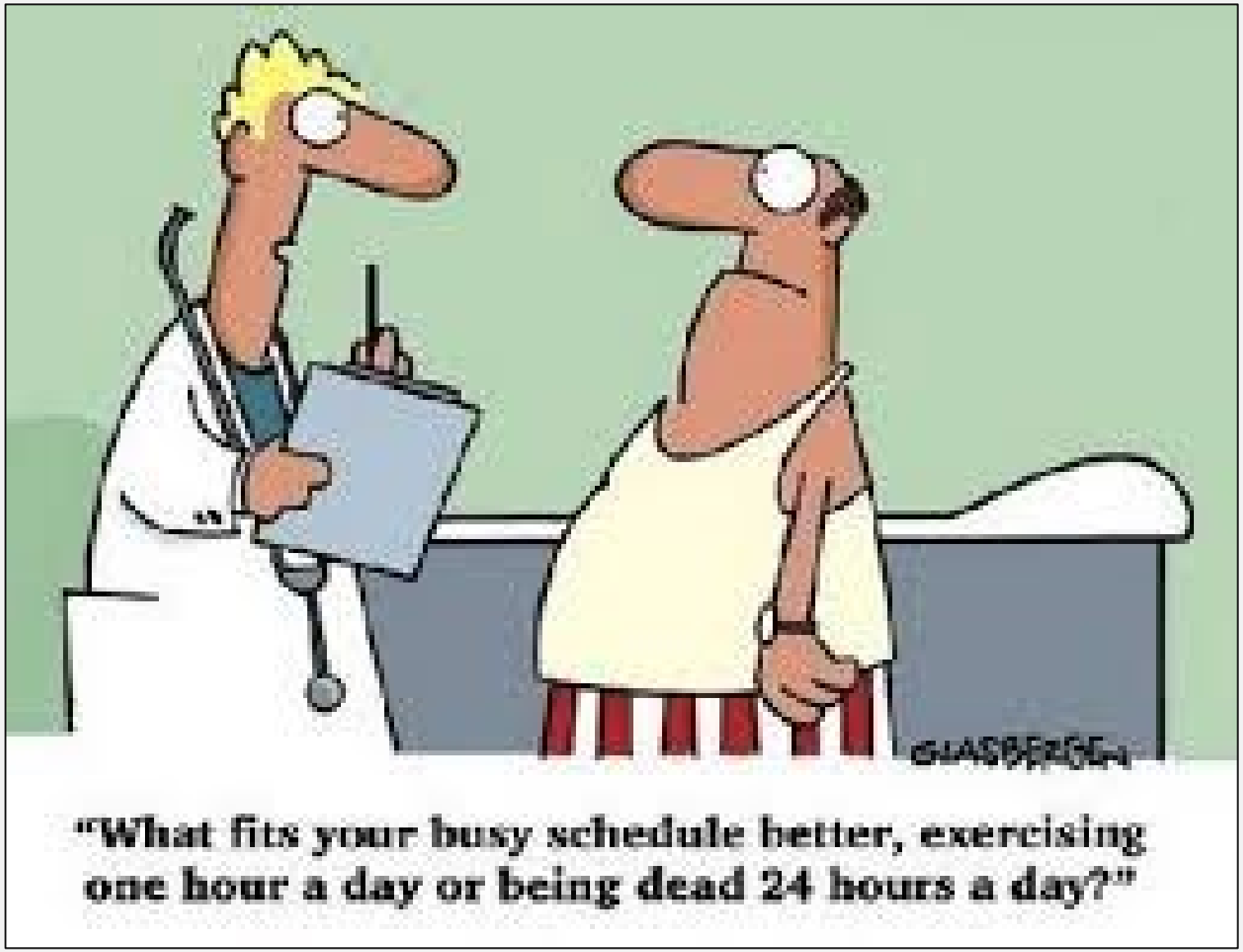
Location: Exhibit Hall, Orange County Convention Center, West Building

Why Can Physical Activity Reduce ESRD or CKD? Exploring the Role of the "Heart Rate Paradox"

[PUB251]

Publication Only

N= 29



mborkum@gmail.com