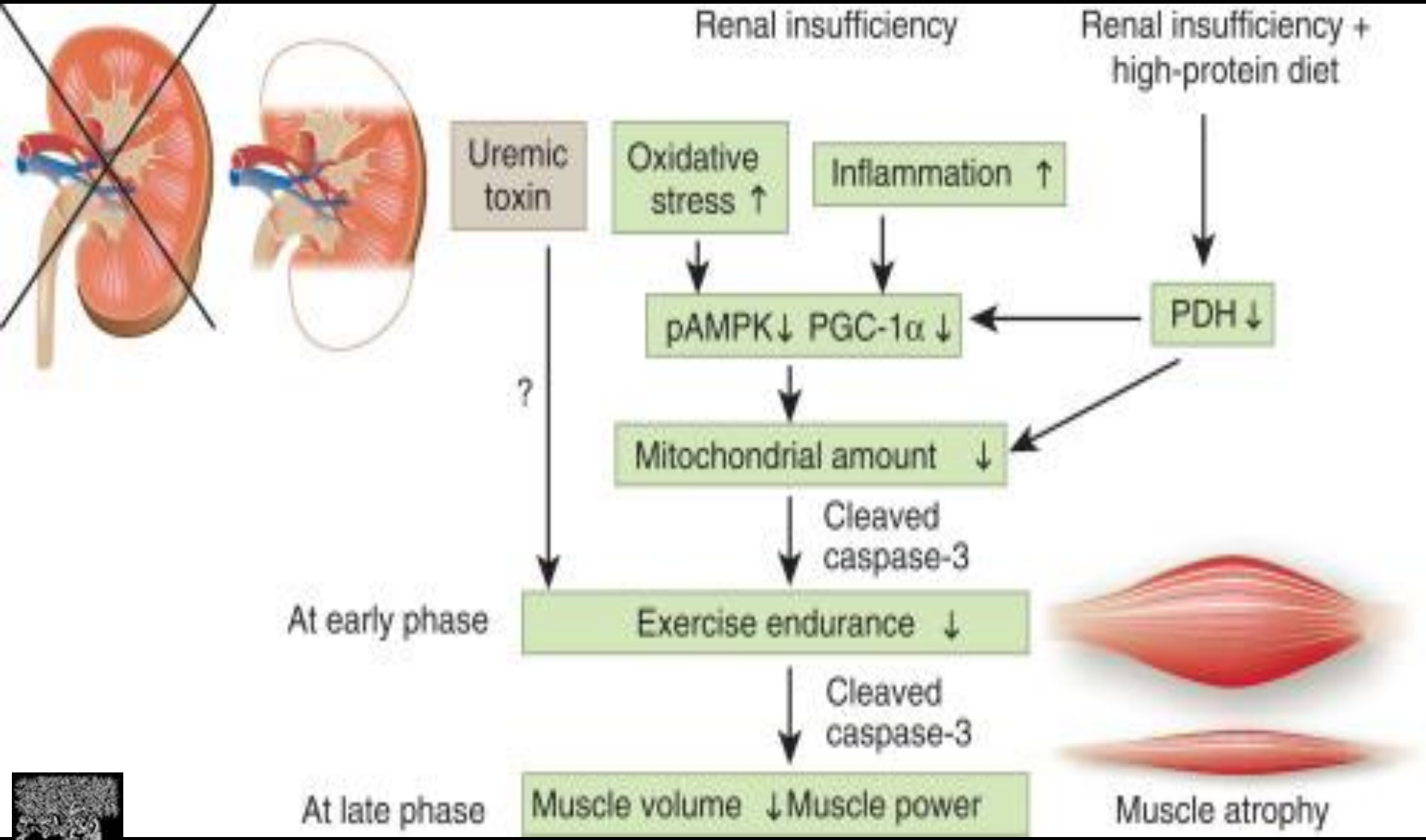
Exercise Training in Hemodialysis Patients

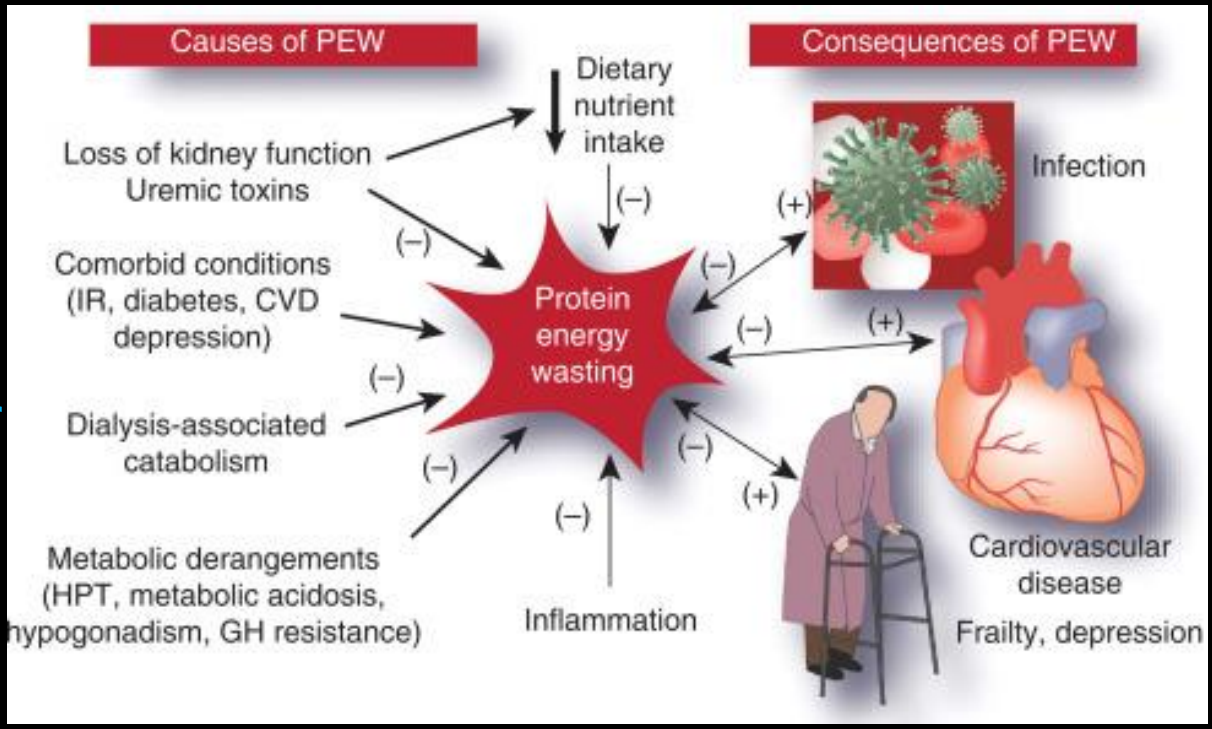
Muscle wasting



Kidney International 2014 851258-1260DOI: (10.1038/ki.2013.539)

Muscle wasting Consequences

- Abnormalities in muscle function
- **Strong risk factor for mortality**
- Increased insulin resistance
- Ventricular mass reduction
- low quality of life
- Depression
- Joint injuries
- Sedentary behavior



prevention or treatment of

Muscle wasting is important

for the management of Hemodialysis Patients

Exercise Training

- Increases muscle mitochondrial content (which might account for the diversity of mitochondria content in Hemodialysis Patients)
- Improve Ventricular mass
- Preserve The lean body mass
- Increase Serum albumin
- Positive changes of The hemoglobin
- Reduction erythropoietin resistance index
- Phosphate reduction

AEROBIC EXERCISE

Intradialytic exercise programs are mostly composed of aerobic exercises. Cycle ergometer or bicycle training is used for aerobic exercise.

AEROBIC EXERCISE

- **Intensity:**

  40% - 80% HRR

- **Duration:**

  30min – 60 min

- **Frequency:**

  Three times a week

AEROBIC EXERCISE INTENSITY

HRR calculate by Karvonen method:

HRR= (HRmax−HRrest)×(40-80%)+ HRrest

$HRR_{(60)}$ = (((220-60)-(70)) * (0.4))+(70)= 106

AEROBIC EXERCISE INTENSITY

Borg's 15-point scale for rating of perceived exertion (RPE) can be used

TABLE 1. Borg's 15-point scale for rating of perceive exertion (RPE)[20]

6-20% effort
7-30% effort - Very, very light (Rest)
8-40% effort
9-50% effort - Very light - gentle walking
10-55% effort
11-60% effort - Fairly light
12-65% effort
13-70% effort - Somewhat hard - steady pace
14-75% effort
15-80% effort - Hard
16-85% effort
17-90% effort - Very hard
18-95% effort
19-100% effort - Very, very hard
20- Exhaustion

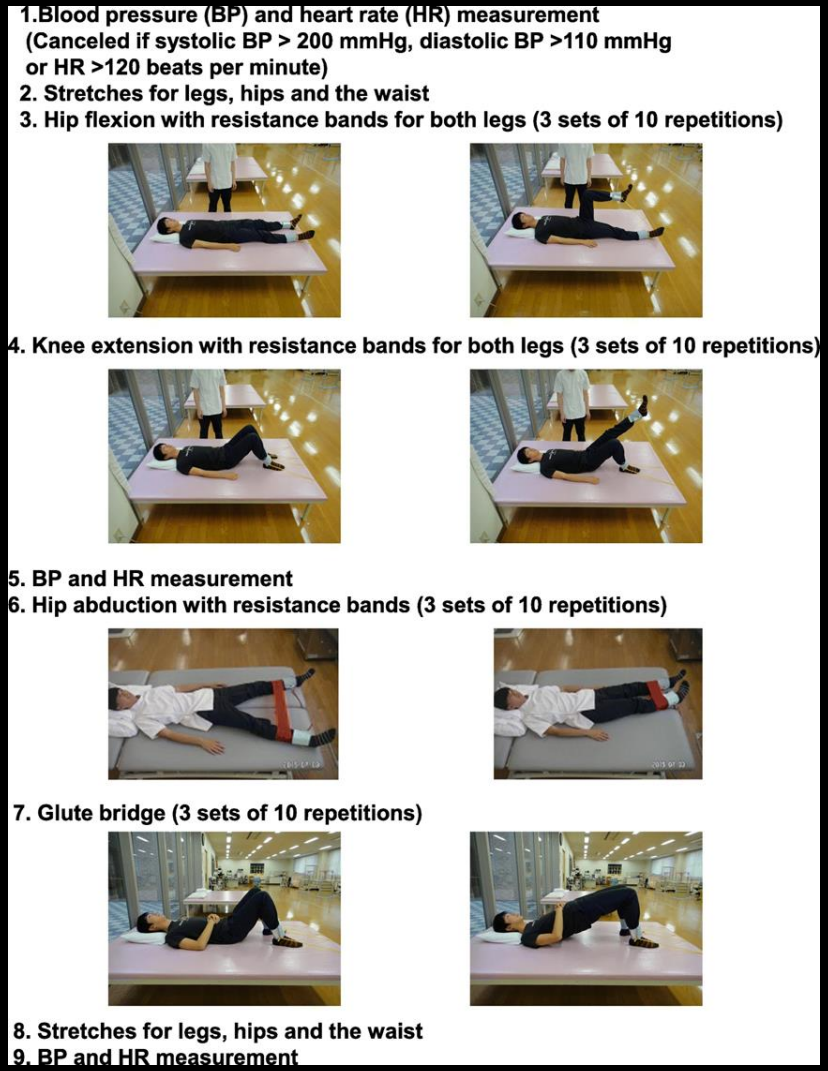
RESISTANCE EXERCISE

upper extremity strengthening

(with free-weight dumbbells)

lower extremity strengthening

(with weighted ankle cuffs)
(Thera-band stretch strap)



RESISTANCE EXERCISE

- **Intensity:**
  - 15 – 17 RPE
- **Repetition and Sets**
  - 2 sets of 10 RM
- **Duration:**
  - 30min – 60 min
- **Frequency:**
  - Three times a week

COMBINED

AEROBIC AND RESISTANCE EXERCISE

IS THE BEST

In conclusion

regular exercise should be

mandatory
(not optional)

in patients with ESRD.

References

WILUND, K.R., J.L. VIANA, and L.M. PEREZ. A critical review of exercise training in hemodialysis patients: personalized activity prescriptions are needed. Exerc. Sport Sci. Rev., Vol. 48, No. 1, pp. 28–39, 2020.

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