

ACTIVITY IDEAS

for children with Chronic Kidney Disease (CKD)

A guide for Health Professionals

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How can physical activity benefit children and adolescents with CKD?

Daily physical activity has been shown to benefit children and adolescents with CKD and those on dialysis as well as post renal transplant in the following ways:

- Children and adolescents with CKD, on dialysis or post-transplant who were able to increase their level of physical activity had improvements in walk speed and distance in the 6 minute walk test (6MWT) indicating improved physical functioning.^{1,2}
- Aerobic and resistance exercise for one hour, twice a week over 3 months during haemodialysis significantly improved walk distance and gait speed, as well as increased lower leg strength and moderate improvements in hand grip strength for children and adolescents.⁷
- Intradialytic cycling for 30 minutes, 2-3 times a week over 3 months in children and adolescents on haemodialysis resulted in benefits of 5% improved walk distance and gait speed (6MWT), and 30% increased lower leg strength (improved chair to stand test).⁹
- Exercise sessions for 1 hour twice a week for 12 weeks for children and adolescents on dialysis showed an increase in aerobic capacity and muscle strength for those who completed the study.¹²
- Quality of life score was raised with increased physical activity levels post-transplant showing benefits to social wellbeing and self-confidence.⁶

What is the current situation regarding physical activity and children with CKD?

There are many barriers to exercise for children with CKD and those on dialysis. Low energy levels, nausea, time constraints with the demands of management, and a lack of motivation are the main reasons, as well as a lack of knowledge about the safety and benefits of participation in physical activity.^{4,1,2,5,14} As a result, children with CKD and those on dialysis spend less time being physically active in moderate to high intensity activities than their peers. According to research, they have significantly lower step counts when tracked with pedometers over a week and are not meeting National Guidelines for Physical Activity.^{1,2,5,8}

For optimum health, physical activity needs to be part of the health plan for children and adolescents with CKD

In early stages of CKD, aerobic capacity is similar to healthy controls¹³, but as renal impairment progresses, fitness levels decline. Children on dialysis have a lower walk test distance and reduced gait speed compared with healthy children. Even after renal transplant, physical activity levels tend to be lower than that of peers and sports competence and conditioning is reduced.^{4,6,8}

Cardiorespiratory function is lower for children with CKD and for children on dialysis, with earlier time to fatigue during a treadmill test than children with normal renal function. Endurance, gait speed and physical functioning are consistently low.^{10,13}

Where children in early stages of CKD have muscle mass similar to healthy controls, as CKD progresses, grip strength and muscle mass declines.^{3,11} Fat mass is relatively high regardless of BMI (weight for height ratio).¹¹ Low levels of activity during post-transplant recovery and rapid weight gain contribute to continued low muscle mass and high fat mass post-transplant.

At all stages of renal impairment,
physical activity has been shown to
benefit health and well being

How might our health service team promote physical activity for children and adolescents with CKD?

The health service team could promote the physical activity for children and adolescents with CKD and those on dialysis in these ways:

- Reassure families directly that activity is safe for their child.
- Explain to families that all children need to be physically active as part of their normal daily routine.
- Let families know about the wider benefits of physical activity – on growth, and motor function as well as the benefits of social interaction and more positive mental health.
- Discuss with families the long-term benefits of physical activity – cardiovascular health, bone strength and weight maintenance.
- Develop a culture that promotes physical activity from the whole medical and allied health team.

SET FUN CHALLENGES

Including fitness tests as part of the regular health appointment:
as a progress marker, a source of motivation, and fun for children and adolescents!

6 MINUTE WALK

Mark out a 20 metre track in the corridor – how far can you walk in 6 minutes?
Tests endurance and physical functioning.

30 SECOND CHAIR STAND TEST

How many times can you stand up from a chair in 30 seconds? Tests lower leg strength.

HAND GRIP STRENGTH

Tested using manometers. Results can be followed to track progress.

Repeat every month over 3 months for short term motivation,
or annually for an ongoing progress check.

What is effective in motivating families to be active?

Potential incentives to motivate higher activity levels include:

- Stressing the importance of keeping up with activities if renal function is declining, to make it easier to resume activity post-transplant.
- Suggesting the use of weekly goal setting and monitoring with pedometers for patients with CKD was effective in increasing walk distance and speed and improving physical functioning.^{1,2}
- Electronic motivational devices can be effective in increasing physical activity in school aged children with CKD (Mepstead & Collins, unpublished).
- Encouraging families to be involved in activity together to achieve activity goals.

How much activity is recommended?

Build up from wherever the family are right now

Set limits on sedentary time to 2 hours a day maximum

Aim to meet National Guidelines for Physical Activity – 60 minutes per day

(<https://www.nhs.uk/live-well/exercise>)

Further strategies to motivate adolescents...

- Individual sessions with adolescents may be more effective than when seen with parents
- Frequent follow up is more effective rather than duration of therapy
- Self-monitoring has been found to be effective in helping adolescents stick to goals
- Making a commitment by setting a specific activity, place and time; this helps adolescents plan their activities and fit it into their daily routine. helps adolescents fit activity into their routine

Ideas for goal setting:

- Sit down with the child and family to set goals for physical activity (for the whole family!)
- Work with the child's interests - what activities are they interested in doing?
- Draw on the families' knowledge of local area and environment – what might be available locally?
- Ensure that goals are SMART – specific, measurable, achievable, realistic/relevant and time-bound
 - Record a written schedule and ask the family to keep it in a prominent place where they can easily refer to it (e.g. on the refrigerator)
- Review progress at the next visit. Show interest and positivity in the family's progress with their goals by enquiring at follow up visits
- Enjoyment is key in choosing activities!



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