Physical Activity in Pediatric Patients after Kidney Transplantation - a pilot study

K. Pfeil¹, S. Weigmann², G. Huber³, K. Weiß³, B. Friedmann-Bette², B. Tönshoff¹

¹ Center for Childhood and Adolescent Medicine, University Hospital Heidelberg
² Department of Internal Medicine / Sports Medicine, University Hospital Heidelberg
³ Institute of Sport and Sport Science, Heidelberg
Why do we talk about exercise and kidney transplant recipients?
Why do we talk about sport and kidney transplant recipients?

Patients with a chronic kidney disease ...

... have a higher risk of cardiovascular complications

1 Tönshoff et al., Monatsschrift Kinderheilkunde, 2012
Why do we talk about sport and kidney transplant recipients?

Patients with a chronic kidney disease ...

... have a higher risk of cardiovascular complications \(^1\)

... report a decreased quality of life \(^2\)

1 Tönshoff et al., Monatsschrift Kinderheilkunde, 2012
2 Hamiwka et al., Pediatric Transplantation, 2009
Why do we talk about sport and kidney transplant recipients?

Patients with a chronic kidney disease ...

... have a higher risk of cardiovascular complications \(^1\)

... report a decreased quality of life \(^2\)

... often suffer from obesity \(^3\)

\(^1\) Tönshoff et al., Monatsschrift Kinderheilkunde, 2012
\(^2\) Hamiwka et al., Pediatric Transplantation, 2009
\(^3\) Tönshoff et al., Monatsschrift Kinderheilkunde, 2012
Objective

The objective of our pilot study is to evaluate the feasibility and efficacy of a standardized sport intervention program.
Setting

• 6/2015 until 12/2016

• 20 pediatric kidney recipients

• Control group: 40 healthy children and young adults
Methods

Pre- and post-interventional evaluation of:

- Body coordination
- Health related quality of life (PedsQI 4.0)
- Maximal isometric grip force
- Maximal performance (spiroergometry)
- Daily physical activity (SenseWear® -device)
Pre-intervention

Intervention 4-6 weeks

Post-intervention

Peds QL
SenseWear device

Spiroergometry
Body coordination test
Maximal grip force
SenseWear® device
Pre-intervention

Intervention 4-6 weeks

Post-intervention

- Peds QL
  SenseWear device

- Spiroergometry
  Body coordination test
  Maximal grip force
<table>
<thead>
<tr>
<th>Category</th>
<th>♀</th>
<th>♂</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 patients</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Age</td>
<td>11.0 (9.5-13)</td>
<td>13.1 (8.4-19.4)</td>
</tr>
<tr>
<td>Time post-transplant</td>
<td>5.3 years (9 months – 11.7 years)</td>
<td></td>
</tr>
<tr>
<td>BMI &gt; 90&lt;sup&gt;th&lt;/sup&gt; percentile</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Glucocorticoids</td>
<td>11</td>
<td></td>
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<tr>
<td>Antihypertensive medication</td>
<td>1 drug: 6, 2 drugs: 3, 3 drugs: 2</td>
<td></td>
</tr>
</tbody>
</table>
... reduced VO$_2$max. and reduced max. workload compared to healthy peers
... reached the age-related values in VO2max.

(Klempt et al., 1987)
Body coordination

Schilling, KTK Manual, 2007
Summary

• VO$_2$max. and maximal physical capacity are reduced in 14.3% (VO$_2$max.) and 100% (W/kg) of patients compared to healthy peers

• Most of our pediatric kidney recipients have either a borderline or a pathological result in the body coordination test.
Summary II

Adherence to the exercise intervention program is limited; so far only 6 out of 8 participants completed the Wii-intervention program.
Thank you for your attention!
... but decreased respiratory exchange ratio (RER)

RER: respiratory exchange ratio \( \left( \frac{\text{CO}_2 \text{ eliminated}}{\text{O}_2 \text{ consumed}} \right) \)