The influence of the sit ski position on performance and daily life activity – a case report

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Medical history

• 24 year old male athlete
• Menigomyelocele
• Hydrocephalus
• Malformation (Pelvis, Legs)
Medical history (x-ray)
Classification

- ASIA Sensibility Test

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<th>Light L</th>
<th>Pin R</th>
<th>Pin L</th>
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Classification

- Muscle testing

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Classification

class LW 11,5
Sitting position - old
Sitting position - new
Inspiration from other sports

Handbike

Race wheelchair
Most common sitting positions in competition

P1: normal
P2: knee high
P3: kneeing
P4: long sit
Electromyogram - front

- M. rectus abdominis
Electromyogram - back

- M. multifidus
- M. erector spinae
- M. latissimus dorsi
Electromyogram
M. latissimus dorsi
Electromyogram
M. multifidus
Electromyogram
M. erector spinae
Electromyogram
M. rectus abdominis
Funktional improvements

• Better control of the sit ski
• Better curve technique

• At uphill climb:
  – Slightly lower frequency of moving cyclus
  – Probably because of longer cyclus way
Improvement in daily life activity

- Athlete is now able to lift his wheelchair into the luggage trunk of his car by himself

- in general: improved core stability
Missing facts

• Spiroergometry with both sit skis

• Moving cyclus analysis
  – cyclus frequency and cyclus way

• Is the new sit ski more effective/economic?
Sitting positions

P1 normal
P2 knee high
P3 kneeling
P4 long sit
FORCE PRODUCTION, BALANCE CONTROL AND MUSCLE ACTIVATION IN DIFFERENT SITTING POSITIONS – PILOT STUDY FOR DISABLED SIT SLEDGE CROSS-COUNTRY SKIERS

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