Team physicians needs and demands on medical care for paralympic athletes

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Sport is suitable for disabled, if:

- spezific movements apply to remaining function
  - To strengthen remaining functions and training balancing movements
  - Important to have no higher injury risk (comparing no-disabled sport – ski alpine)
  - No increase of the disability
Needs and Demands

Sportsmedicine
Anti-Doping
Rescue Medicine
General medicine
Orthopaedics
Orthotics and Prosthetics
Psychological knowledge
Classification of athletes

All-in-one-device suitable for every purpose
„eierlegende Wollmichsau“
„Pic-sheep-dog laying eggs“
Needs and Demands in my 20 year experience

- Medical coaching the whole year
- Education training in Anti Doping
- Race doctor (Emergency Medicine)
- Medical treatment in training and competition
- Classification of athletes
Dysmelia lefti hand
Racer with spine injury Th10/11 – LW 10
Evaluation of alpine skiing injuries in disabled competition skiers

• From the years 1994 to 2004 disabled alpine skiing-related injuries of the German disabled national team were reviewed. The background was to demonstrate the injury pattern of disabled Alpine skiing and evaluate potential risk factors as well as to compare these injury patterns and incidence with the group of non-disabled skiing.
Results

- 1995 No injuries

- 1996 Injury of the Plexus brachialis (LW2)
  - conservative treatment - restitutio ad integrum
Results 1997

• Femur-Fracture (LW 3 double below knee amputee – skiing with 2 prostheses)
Caused by a direct impact fall

• Therapy: operative treatment by nail;
post-OP infection and 3 Re-OP´s;
since 1998 no infection and good function
Results 1998
Paralympics Nagano

- ACL-rupture partial (LW 5/7) caused by rotation-trauma in deeply flexed, seated position
- Therapy: conservative; today very good function, no problems
Results 1998
Paralympics Nagano

Class LW 11

- Acromio-clavicular-separation type
  Rockwood II
  Fall with extended arm in abduction
- Therapy: conservative; restitution ad integrum
Results 1998
Paralympics Nagano

- Clavicula-Fracture
- Therapy: conservative treatment; no problems
Athlete class LW 2: sprain fracture of the calcaneus in the ski boot!
Why happened this fiasco?

actual analysis Nagano:

We arrived too late
Chancing the clocks
heavy wet snow
less of speed training
and competitions
The necessary action as result of this disaster was:

We started with an assessment of physical in cooperation University Goettingen and University Munic (Dr. Spitzenpfeil) Speedtraining before paralympics and world-championships. Early arrival in time zone.
Results
1999 and 2000

- 1999
  No injury

- 2000
  Athlete class LW 2:
  Distorsion of the plexus brachialis and anterior luxation of the shoulder (outtrigger interlocked at the gate)
  Therapy: conservative; no problems till now
Results 2001

- LW 10: Clavicula-fracture
  Therapy: conservative; restitutio ad integrum

- LW 2
  Fracture shoulder tuberculum majus and anterior luxation
  Therapy: conservative

Konsequence: in training courses are flags in GS and SG not tightened
Results 2002
Paralympics Salt Lake City

- LW 12
  wrist fracture  
(Radiusfraktur loco typico)
  Therapy: conservative, plaster cast, restitutio ad integrum
Injuries 2002-2006

• 2003: Shoulder Luxation LW 11
• 2004-2005: no injuries
• 2006: Fracture of the Tibiahead LW 6/8 (free skiing after end of training)
• 2007, 2008: no major injuries
• 2009: fracture of the Tibia (B2) training Slalom Therapy: OP by Tibia Nail – intensive recreation training – 7 month later bronze medal paralympics Vancouver downhill
• 2009: ACL rupture (LW 4 incomplete lesion after spine injury) – Athlete retired
Some specific cases
Paralympics in Vancouver

- 2010: No Major Injuries!
- 2011 No injuries
- 2012: fracture of the cost (sitski)
- 2013 fracture of the cost (sitski)

But: A and B- Team Germany only 8 Athletes in Review
Paralympics Sotchi

- Contusion cerebri and fracture of the cost 11 (LW 12-1)
- Neck distorsion (LW 10-1)
Comparison with non-disabled skiers
Comparison with non-disabled skiers
Results Injury Rate & Mechanism
German Ski Team

The injury rate of the german national alpine ski team account 0.03%. This injury rate comparable with the injury rate of non disabled skiers.

There is no difference in the mechanism of the injuries in disabled skiing as well as in non disabled skiing except the plexus brachialis distorsion and a higher rate of shoulder and thorax (cost) injuries in the sitting classes and in class LW 2.
Typical medical problems: Paralympics Turino

- Paralympic village at Sestriere 2000 m high
- Humidity 35%
- Difficult adaptation to dangerous climate climatic 2000 m above sea level
- High Physical loading, difficult regeneration
Medical problems and treatment
Paralympics Turino

• Overload problems - high muscular tension, functional disorders upper and lower extremity as well as functional spine disorders and non-severe contusions
  Therapy: Antiinflammatory drugs, muscle relaxans, salves, magnetic field therapy, infiltrations (local anaesthetic and homöopathic, (or corticoid intraarticular), kinesio tape and other functional bandages

• Physiotherapie!!
General medicine Disorders caused by:

- low atmospheric pressure
- low humidity
- Herpes labialis and infektions of the respiratory tract

Therapy: Azyclovir, Paracetamol, Homöopathic Therapy, Antibiotics
Major problem

Paralympics in Turin

- Athlet hasn’t realised that he has an ulcer at the gluteal area; gets fever 38.5; first diagnosis urogenital infection
  Therapy: Antibiotics.
  At the investigation an gluteal/tochanter major ulcer is apparent;
  Medical treatment: Debridement sterile; Athlet kommt
  athlet gets exsiccosis (ignores all warnings)

- Septic shock
  Pulse 160, RR 90, Temp. 40.6!

- In paralympic clinic: Infusion; Transfer after stabilisation
  the same night to Turno, blood culture; Therapy with 3 specific antibiotics and additional antimycotic therapy.
  Transfer par airplane after 5 days to Germany Hamburg spine and paraplegic center
Prävention by Team-Management

- Trainer
- Co-Trainer
- Serviceteam
- Waxler

- Medical Team:
  - Team physician
  - Physiotherapists
  - Prosthetist/Orthotist?
Prevetion wear

- back protector
- Shoulder protector
- Ellbow and forearm protector
Orthotic devices
Prävention

- Assesment of physical for disabilities
  - Isokinetic-Test, endurance, springiness, coordination
- Individuell training plans:
  - Muscle development, stretching, endurance-training, Wet-West-Training,..., coordination, core-training, sports specific technics
- Medizinische supervision and care:
  - Physiotherapist at every train in the field
  - Team doctor supervision (phone, skype, sms –pictures)
  - Team doctor on site at special events like speedtraining or the main events
proposal

• We have to install a world wide network of paralympic physicians
Anti Doping

In Germany twice a year the athletes get an education training about anti-doping rules and forbidden substances.

If athletes take drugs they have to contact me and give me the information.

I give support for examination of use or TUE if necessary.

There are DBS-meetings about anti-doping every year.
What to do as race doctor?

• Contact with Fis TD about the slope
• Control of the rescue possibilities an rescue party (e.g. helicopter landing)
• If there an emergency case the doctor s the boss on slope— not the FIS TD!!
• One case... – fall at the 3rd gate without reason - Unconscious state – no pulse radial , left side dilated pupils ????!!!!!!??
Thank you for your attention

www.orthopaedie-northeim.de