Diversifying Concussion Management in Para Sport: Updates and Clinical Innovations for Athletic Trainers & Therapists

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Concussion in Para Sport Group

Encompassing *Diverse Heterogeneity* in Para Sport *(& all sports)*

Sources: paralympic.org; cbc.ca; nytimes.com; paralympic.ca; mlive.com

It is critical to consider the **intersectionality** of various factors within a **para athlete's identity** when examining the impacts of concussion...

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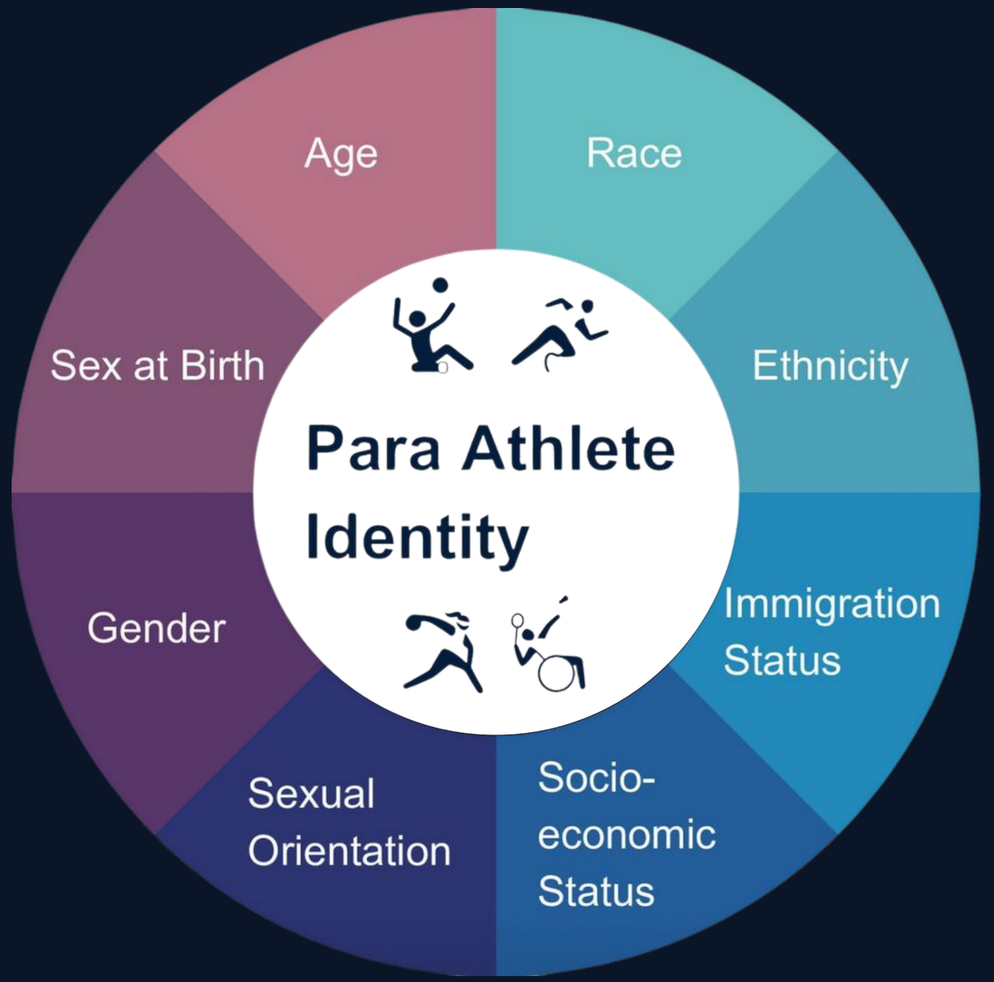

Retrieved from Weiler et al., 2025, *BJSM*

Although Para sport athletes face a similar risk of concussion injury, a lack of data remains to understand injury prevention and care

Increased injury surveillance at Paralympic Games - however, incidence may be higher during training and different levels of sport

Risk of high-speed collisions, falls, and body contact (e.g., Para Ice Hockey, Wheelchair Basketball, Goalball, Wheelchair Racing [Para athletics], Wheelchair Rugby, Para Alpine)

Individual athlete characteristics: Females and athletes with visual impairments (VI) may report a higher incidence of concussion

Lexell et al., 2021; Sobry et al., 2022; Singh et al., 2024; Kasitinon et al., 2021; Andersen et al., 2023 Runcimen et al., 2023;
Sources: ABC News; WPIH

The first position statement on concussion in para sport highlighted critical knowledge gaps in clinical guidelines for further research

The 1st Position Statement of the Concussion in Para Sport (CIPS) Group

Weiler, R., Blauwet, C., Clarke, D., Dalton, K., Derman, W., Fagher, K., Gouttebarge, V., Kissick, J., Lee, K., Lexell, J., Van de Vilet, P., Verhagen, E., Webborn, N., & Ahmed, OH. *BJSM*. doi: 10.1136/bjsports-2020-103696

Infographic by Adam Virgile

THE CONCUSSION IN PARA SPORT (CIPS) GROUP

- Previous International Concussion in Sport Consensus Statements have not addressed the needs of para athletes.
- The CIPS group was formed to provide a framework for the assessment, treatment, and return to play after concussion in the para athlete.
- The CIPS contributors are a diverse, multidisciplinary group with athlete representation, dedicated to improving para sport concussion research and standards of care.

CIPS ASSESSMENT TOOLS

ON-FIELD TOOLS

SCAN ME!

STANDARD POST-CONCUSSION RETURN TO PLAY PROTOCOL: MODIFICATION AREAS FOR PARA ATHLETES

Many areas of standard concussion protocols require special attention and/or modification of these recommendations for para athletes, depending on the unique nature of impairment.

Standard management ▲ Modifications advised for para athletes

PARA SPORT IMPAIRMENT

STANDARD POST-CONCUSSION RETURN TO PLAY PROTOCOL	Impaired muscle power-spinal cord injury	Impaired muscle power-lower motor neuron	Impaired passive range of movement	Amputee or limb deficiency	Leg length difference	Short stature	Upper motor neuron conditions	Visual impairment	Intellectual impairment
Rest	▲	▲					▲		▲
Active rest	▲	▲	▲	▲	▲		▲		▲
Gradual return to activities									▲
Return to school/work progression							▲	▲	▲
Return to sport progression	▲	▲	▲	▲	▲		▲	▲	▲
Persistent symptom management	▲	▲	▲	▲	▲		▲	▲	▲

MAIN TAKEAWAYS

1. The Sport Concussion Assessment Tool 5 (SCAT5) should be used for concussion assessment for para athletes; the CIPS appendices should guide the interpretation of the SCAT5 results.
2. The SCAT5 should not be used by itself to diagnose concussion in para athletes; para athletes may have a concussion even if their SCAT5 is deemed to be 'normal'.
3. Periodic baseline pre-participation evaluations (including the SCAT5) are essential to determine a baseline reference point for concussion symptoms in para athletes.

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Weiler et al., 2021, *BJSM*

Concussion Assessment: Para athletes may have different clinical presentations post-injury compared to non-Para athlete populations

Symptom reporting (e.g., total number and severity)

Cognitive performance (e.g., memory and visual motor speed)

Cervical spine (e.g., previous spinal cord injury; quadriplegia)

Vestibular-ocular motor screening (VOMS)

- ↑ symptom provocation = greater core function & previous concussion
- Para athletes with VI (e.g., nystagmus)

Balance control and coordination

- Wheelchair Error Scoring System (WESS) & propulsion tasks
- Upper- and/or lower-limb deficiency or amputation (prosthetic use)

Exercise Tolerance and Autonomics

Instrumented seated balance assessment

Moran et al., 2020; Harper et al., 2021; Gee et al., 2021; Dyer et al., 2024; Moran & Stran. (*under review*)

Require adaptable injury risk prevention, clinical assessment tools, and rehab approaches

Development of adapted SCAT6 tools:

- Para SCAT6-WC (wheelchair users)
  - *Validity testing - publication in 2026*

- Para SCAT6-VI (visual impairment)
  - *Meetings - November 2025*

Even with the guidance of adaptive tools, it is essential for practitioners to prioritize safety and to understand specific needs for individual Para athletes

UNITED STATES OLYMPIC & PARALYMPIC COMMITTEE

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CISG CONCUSSION IN SPORT GROUP EST 2002

AMSSM AMERICAN MEDICAL SOCIETY FOR SPORTS MEDICINE

LAKESHORE

**** Check out our poster!***

Post et al., (*under review*)

Derstine et al., (*under review*)

Sociocultural perspectives in Para sports

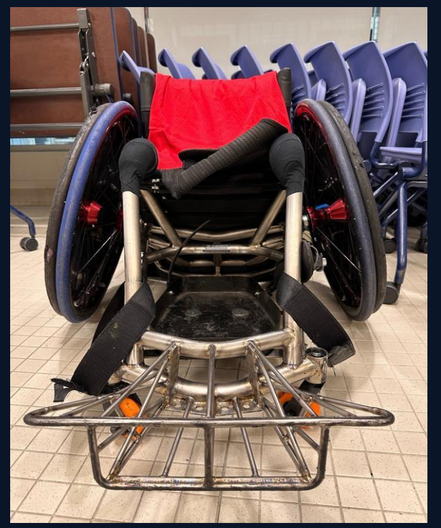
Most commonly researched domains in para sport include:

- Economic Stability
- Health Care Access and Quality
- Neighborhood and Build Environment

- Intersectionality

Economic Stability

- Financial Support of Para Sports
- Equipment costs
- Accessible Facilities
- Lack of equipment in immediate community
- Funding sources for programming



Healthcare Quality and Access

Limited availability:

- Healthcare providers with knowledge of Para athlete care
- Environmental access
- Access to specialty clinics and accessible settings to serve para sport athletes.
- Resources available

Results:

- Increased injury risk, delayed treatment, poorer short- and long-term health outcomes, and reduced participation or performance in sport

"...we had to find a practitioner that would, how do I put this like? **Meet my needs and understand the visual impairment aspect** of it, too. I think it was like a two-week period..." - *Paralympic athlete*

Neighborhood and Built Environment

Includes roads, sidewalks, public transportation, recreational and clinical facilities:

- Poor accessibility to facilities
  - Resource desert
- Limited facilities with necessary resources for para sport athletes
- Proximity to facility
  - The closer individuals live to accessible sports facilities, gyms, or parks, the more likely they are to engage in para sport.

Take Home Message: *Inclusion Matters*

Para and adaptive athletes compete in all levels of sport requiring careful attention by AT's to optimize injury risk prevention & equitable access to concussion care.

- Recognizing intersectionality of various individual factors for concussion assessment and management
- Seeking knowledge and resources
- Identifying barriers and potential solutions to improve accessibility and support for para athletes

Thank you!

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