Minimal Impairment Criteria in Para Table Tennis for Standing Players with Physical Impairments: Evidence-Based Support for Revisions

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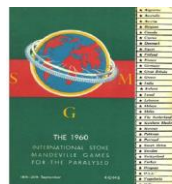**2 Medical and Classification Committee, ITTF- PTT**

3 China Medical University, Taiwan

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Para table tennis in Paralympic program

- **Since the origins → Rome 1960**

- **TOKYO 2020**

Sport	Medal events	Athletes
Athletics	168	1100
Swimming	146	620
Table Tennis	31	280
Wheelchair Basketball	2	264
Cycling	51	230
Sitting Volleyball	2	192
Powerlifting	20	180
Shooting	13	154
Archery	9	140
Judo	13	138
Goalball	2	120
Boccia	7	116
Wheelchair Tennis	6	104
Rowing	4	96
Wheelchair Fencing	16	96
Wheelchair Rugby	1	96
Badminton	14	90
Canoe	9	90
Triathlon	8	80
Equestrian	11	78
Taekwondo	6	72
Football	1	64
Total	540	4400

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TT classification systems

Medical-based classification (1948 – 1988)

Sport specific classification systems (since 1990)

Functional classification system for TT players with PI in 2002

Classification system for TT players with II in 2010

Evidence-based classification systems (as of 2015)

# Evidence-based classification systems

- **Research is needed in Para TT and classification**

- **Para TT is popular.**
  - > 5000 players in master list
  - 2000 active Para players, > 1500 players in ranking

- **Findings of the research may lead to changes or revisions**
  - Minimal Impairment Criteria (MIC)
  - Class allocation criteria

Background

- **Classification in Para TT**
  - 11 classes in PTT
  - 5 classes for wheelchair players with PI (1 to 5)
  - 5 classes for standing players with PI (6 to 10)
  - 1 class for players with II (class 11)

- **PTT Classification Process:**
  - Bench test, TT functional test, Observation during competition
  - Players are also observed in different international events by neutral classifiers

Standing clases

6 7 8 9 10

Minimal impairment
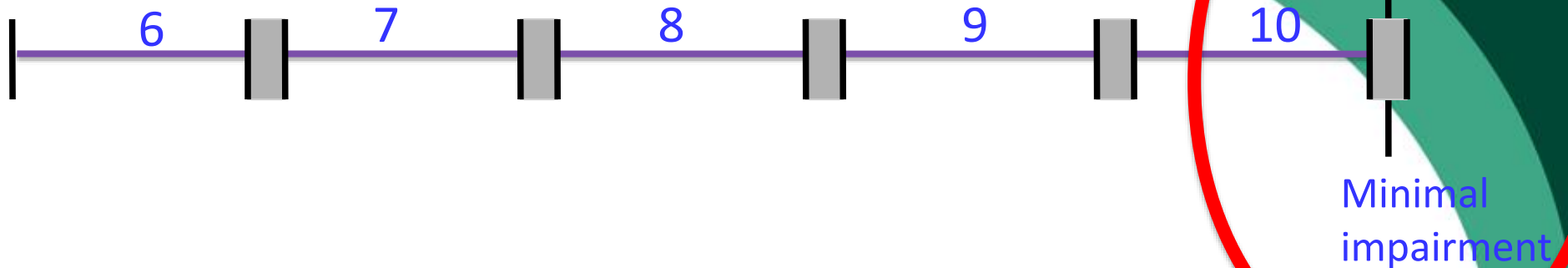
- Inclusive criteria for standing players with PI in class 10 have never been examined deeply and objectively since the functional classification system has been developed and used in 2002.
- Countries try to include players with very mild PI who even may not qualify for para TT in order to win medals at the major international TT championships.

Purpose

- **To evaluate the minimal impairment criteria (MIC) in Para Table Tennis (PTT) for standing players in class 10**

  - To analyze the types of PI and affected parts of bodies in all ranking TT 10 players to clarify any type of PI dominated the class

  - To evaluate PI and related functions of players to clarify whether TT10 players fit MIC.

Theoretical Assumptions

• **In each type of PI, players should have similar opportunities to reach top 8 and top 16 in the ranking comparing with the participation rate.**

• **In each type of PI with specific affected body parts, players should have similar opportunities to reach top 8 and top 16 in the ranking comparing with the participation rate.**
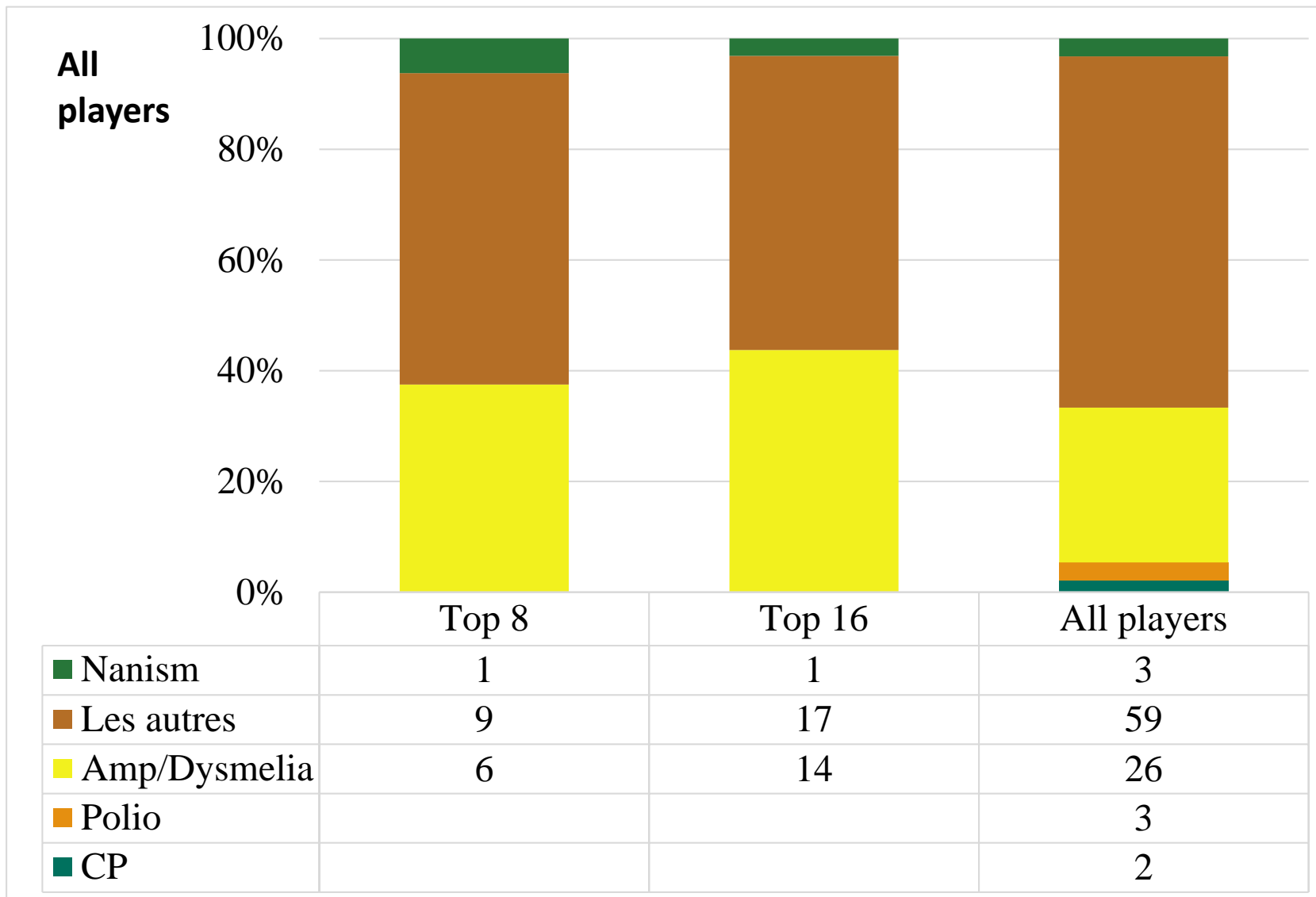
Research Methods

- **Participants (TT10 players in March 2018, N=93)**
- ICC information examined by two classifiers:
  - complete *n*=18, insufficient *n*=24, lack *n*=51

	Male	Female	Total
Africa	2	1	3 (3.2%)
Americas	11	2	13 (14.0%)
Asia	18	9	27 (29.0%)
Europe	35	13	48 (51.6%)
Oceania	0	2	2 (2.2%)
Total	**66**	**27**	**93 (100%)**

Research Methods

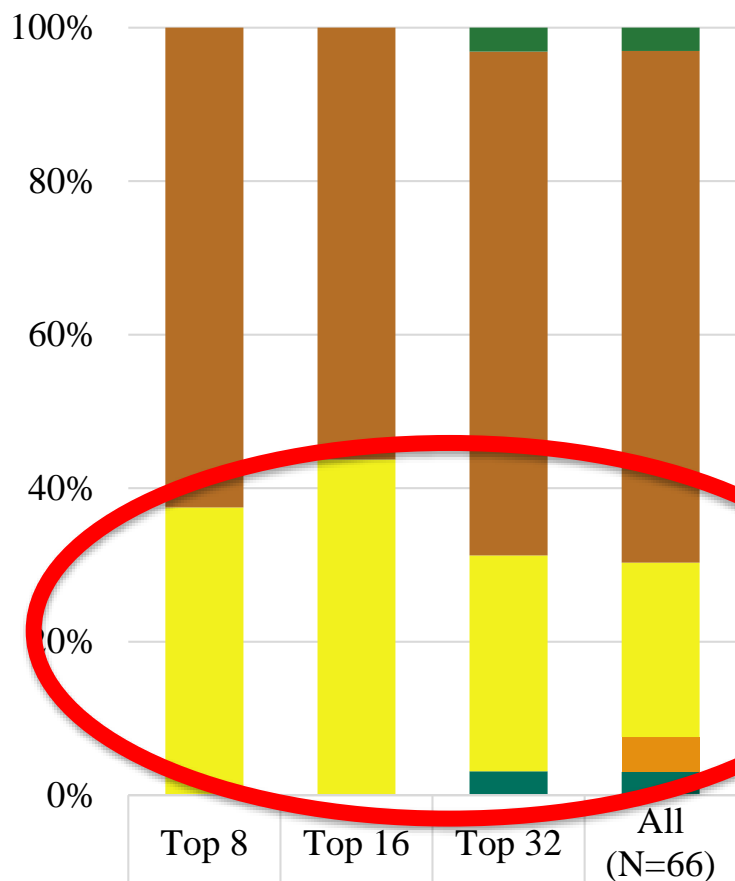- **Collected the detailed data from ICCs, such as types of PI (CP, polio, amputation/dysmelia, namism, les autres), affected bodies (playing arm, non-playing arm, single leg, legs, trunk, or combinations), and testing scores in bench tests, and ranking of TT10 players from ITTF web in Mar 2018**

- **Data analysis**
  - Characteristics of PI in TT10 players (males and females)
  - Characteristics of affected body parts in TT10 players
  - Combination of PI and affected body parts in TT10 players
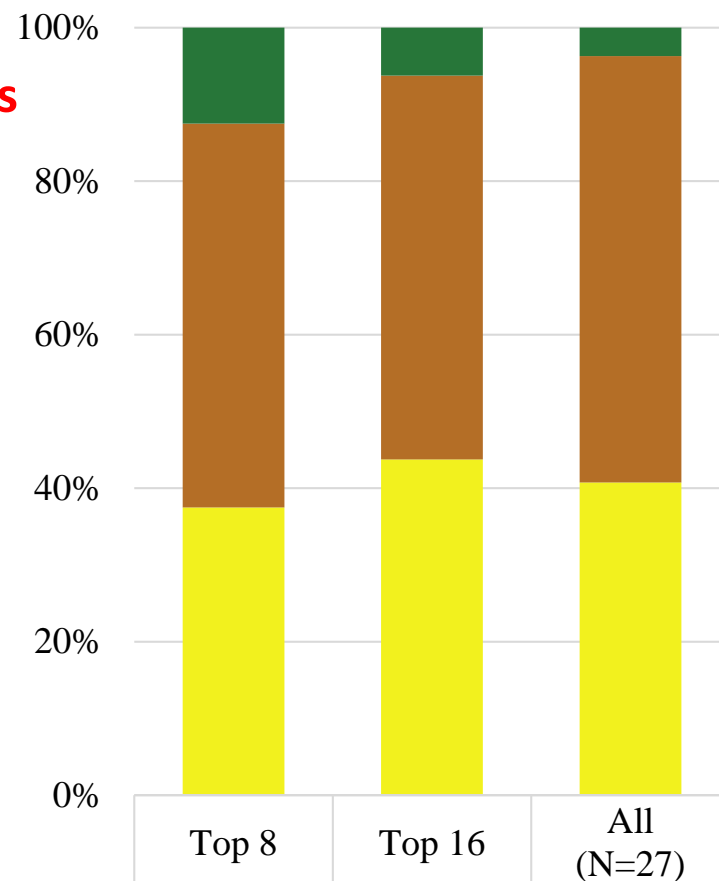
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Characteristics of physical impairments (I)

All players	Top 8	Top 16	All players
■ Nanism	1	1	3
■ Les autres	9	17	59
■ Amp/Dysmelia	6	14	26
■ Polio			3
■ CP			2

Characteristics of physical impairments (II)

Males

	Top 8	Top 16	Top 32	All (N=66)
■ Nanism			1	2
■ Les autres	5	9	21	44
■ Amp/Dysmelia	3	7	9	15
■ Polio				3
■ CP			1	2

Females

	Top 8	Top 16	All (N=27)
■ Nanism	1	1	1
■ Les autres	4	8	15
■ Amp/Dysmelia	3	7	11
■ Polio			
■ CP			
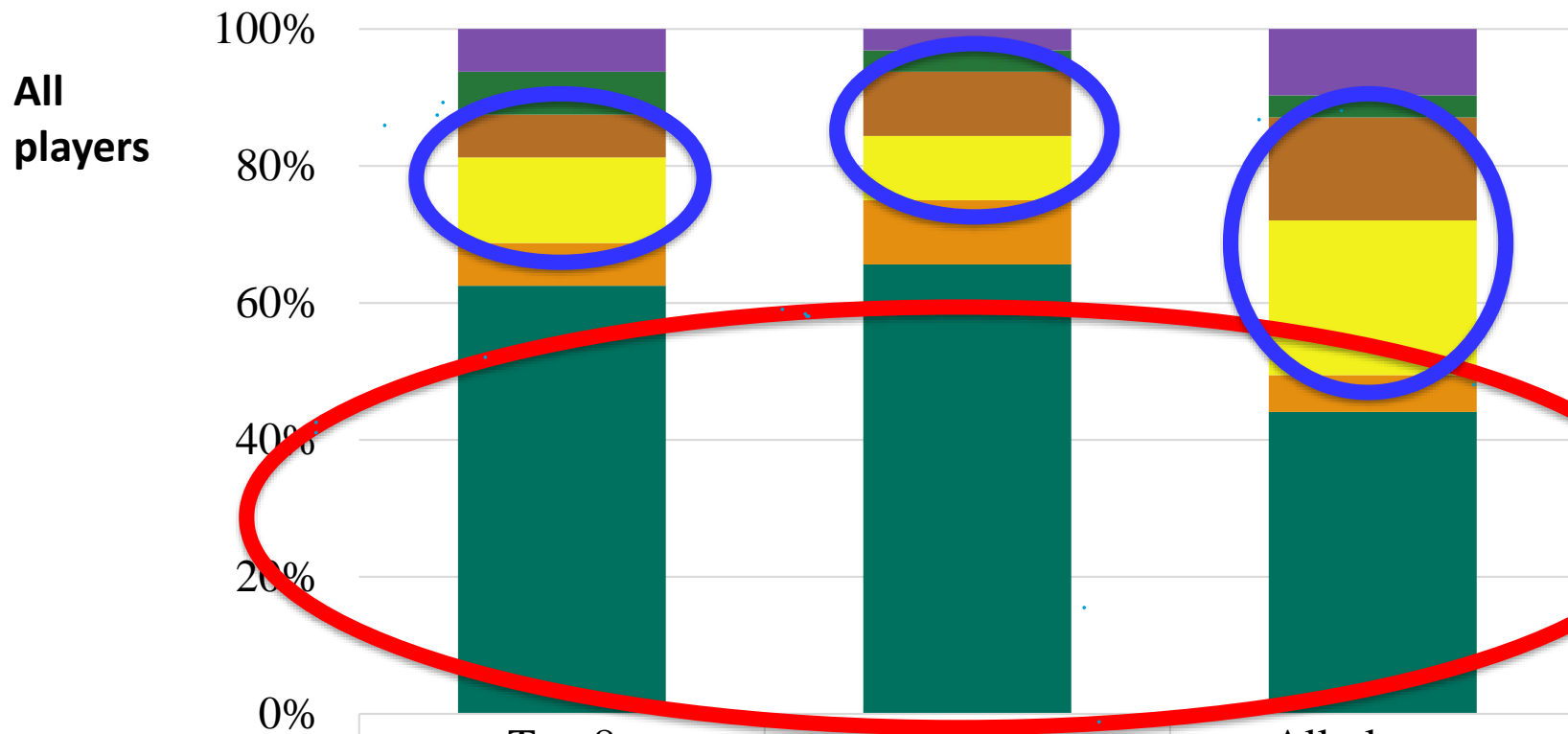
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Characteristics of affected body parts (I)

	Top 8	Top 16	All players
■ other/mixed	1	1	9
■ BH/trunk	1	1	3
■ both legs	1	3	14
■ single leg	2	3	21
■ playing arm	1	3	5
■ non-playing arm	10	21	41

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Characteristics of affected body parts (II)

Males
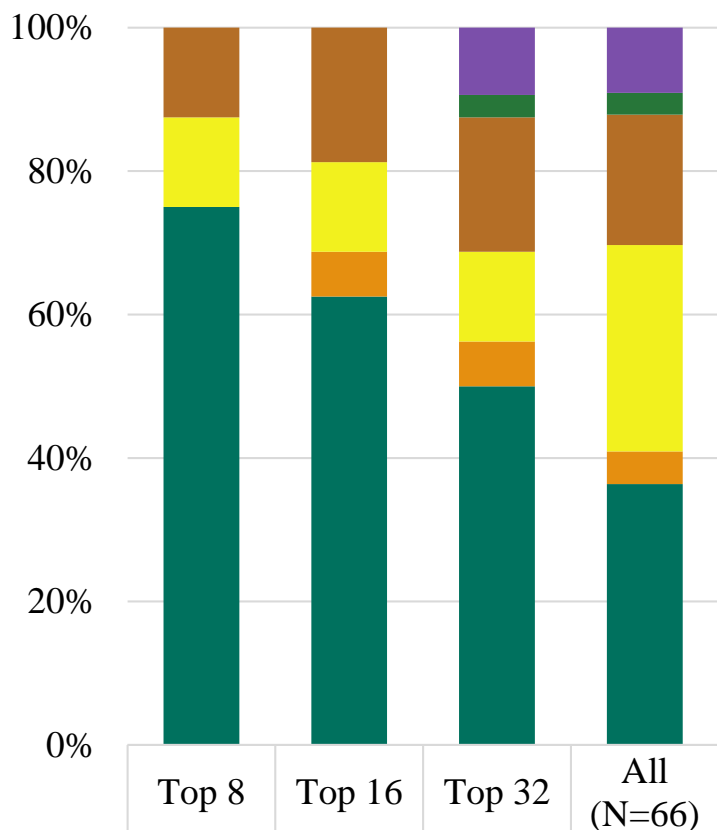
	Top 8	Top 16	Top 32	All (N=66)
■ other/mixed			3	6
■ BH/trunk			1	2
■ both legs	1	3	6	12
■ single leg	1	2	4	19
■ playing arm		1	2	3
■ non-playing arm	6	10	16	24

Females
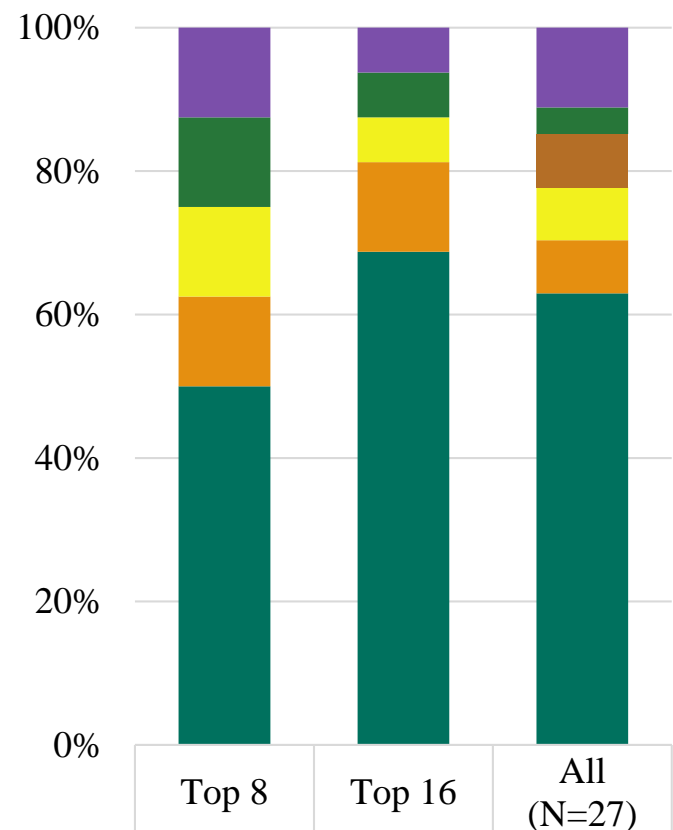
	Top 8	Top 16	All (N=27)
■ other/mixed	1	1	3
■ BH/trunk	1	1	1
■ both legs			2
■ single leg	1	1	2
■ playing arm	1	2	2
■ non-playing arm	4	11	17

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Combination of impairments and affected body parts

↓ with the competitive level

↑ with the competitive level

Top 8 players • Top 16 players • All players

- ■ CP/single leg
- ■ Polio/single leg
- ■ amputation or dysmelia/playing arm
- ■ les autres/non-playing arm
- ■ les autres/single leg
- ■ les autres/mixed

- ■ CP/mixed
- ■ amputation or dysmelia/non-playing arm
- ■ amputation or dysmelia/single leg
- ■ les autres/playing arm
- ■ les autres/both legs
- ■ Nanism
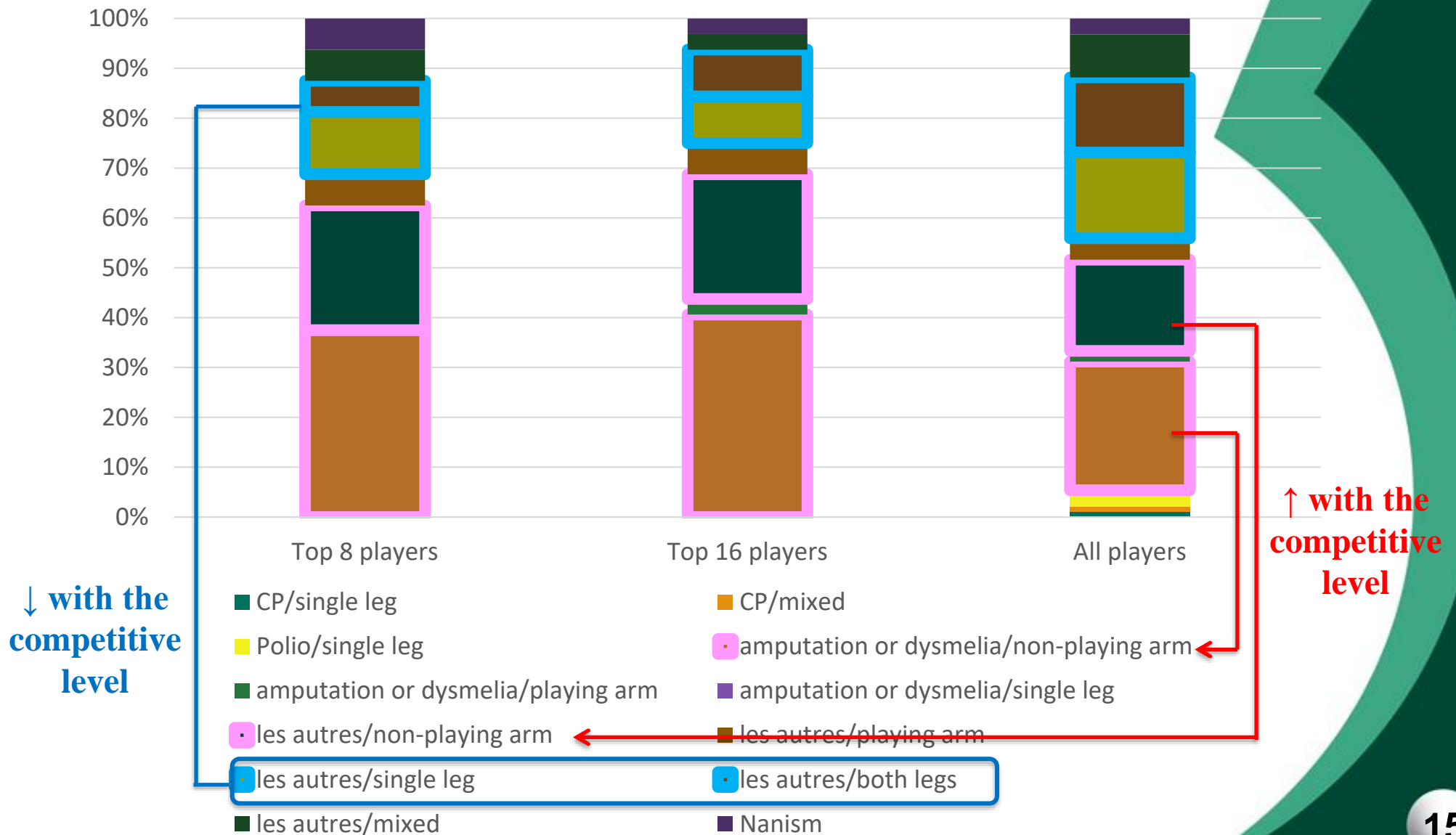
Results

After evaluating 35 players with PI in class 10 during the world championships, 4 players may not fit the current MIC and 4 players may be in borderline. The detailed data may help us to clarify the borderline in class 10 in greater depth.

Discussion

- **Taking into account both factors (i.e., PI and affected body parts), players who have amputation/dysmelia or les autres, specifically brachial plexus injury, affecting their non-playing arms may be dominant in class 10.**

  - These findings raise an important issue regarding fair play as players with these specific PI may take an advantage in class 10.

Discussion

- **Many missing data on muscle strength, the range of motion, or the length of stump were found on players' ICCs.**
    - The manual muscle testing was not administered and recorded in most players with brachial plexus injury.
    - How can TT classifiers identify players to fit the system if the ICCs are not fully and logically completed?
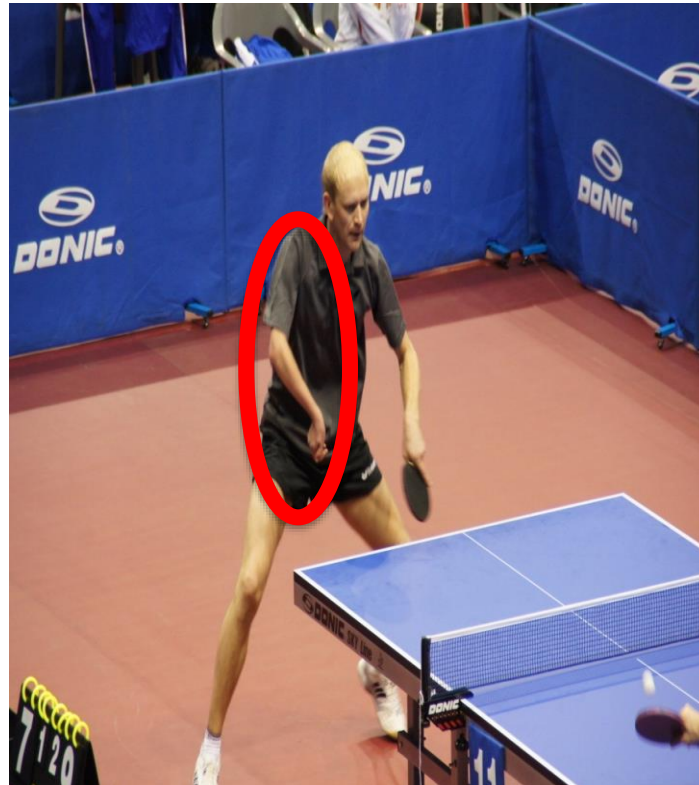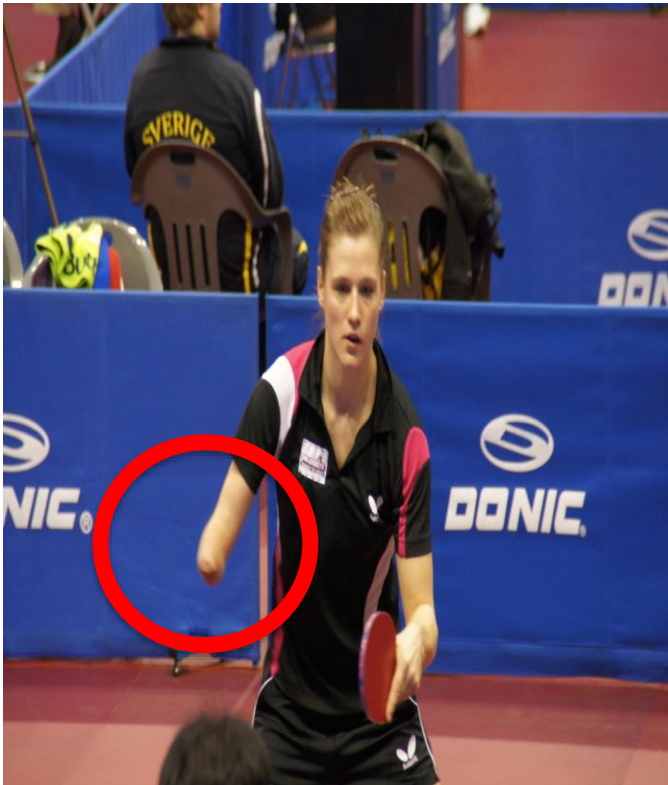
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Discussion

Proposed Objective MIC in different characteristics of PI

- Non-playing arm: raise from loss of 35 points to 40 points

- Playing arm: loss of control of grip, affected function of strokes, affect performance (loss 10 points)

- Single leg or legs: loss of 10 points in single leg or 15 points in two legs.

- Trunk problems: loss of trunk functions in 10 points

- Others: dwarf male <140 cm, female <137 cm, or combinations of several parts of affected bodies.

Discussion

Objective MIC in different characteristics of PI

- Non-playing arm: raise from loss of 35 points to 40 points or residual forearm length less than 2/3

Discussion

Objective MIC in different characteristics of PI

- Playing arm: loss of control of grip, affected TT function of strokes, or loss of 10 points in playing arm

Conclusions

- **The credibility of minimal impairments criteria (MIC) for class 10 is essential.**

  - A much clearer and more **objective cut-off** for minimal impairment criteria is needed and revised for class 10.

  - Apply the revised MIC early to protect eligible players

  - Avoid "able-bodied" TT players in the system-train competent classifiers to do the job well and countries should not always bring very mild impairments of players to Para TT.

Future directions

- **Long-term follow up "eligible" class 10 players.**

- **PTT-MIC in class 10 will be revised soon and then applied in Jan 2021. Research is still needed to monitor the effectiveness of the revised criteria.**

- **Evaluate criteria in class 9 after the application of revised MIC in class 10.**

Thanks.