

Improving Reliability and Validity of Current Classification Methods for Athletes in Classes T35-T38 (IPC Athletics) and FT5-FT8 (CP Football)




VISTA
CONFERENCE



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Introduction



1948



1988



1992



2003



2007



2015



**Medical
Classification
Systems**

**Functional
Classification
Systems**

**Sport Specific and
Evidence Based
Classification**

1978



access to sport

adapted from Hart (2014)





Research Problem

+

STANDING

MOTOR
FUNCTION

WHEELCHAIR

-

“MEDICAL” CRITERIA

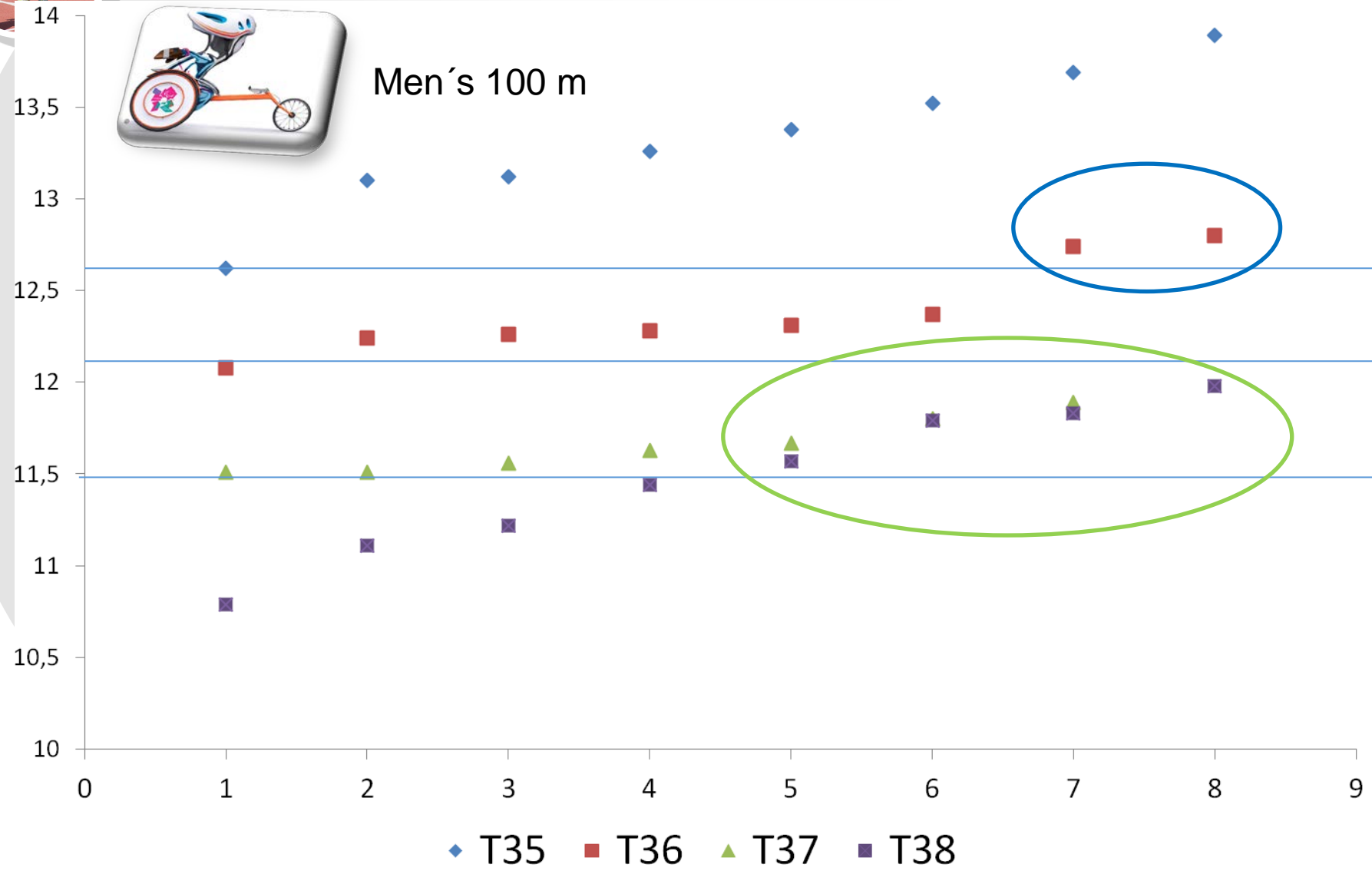


Research Problem



Men's 100 m

Time (s)

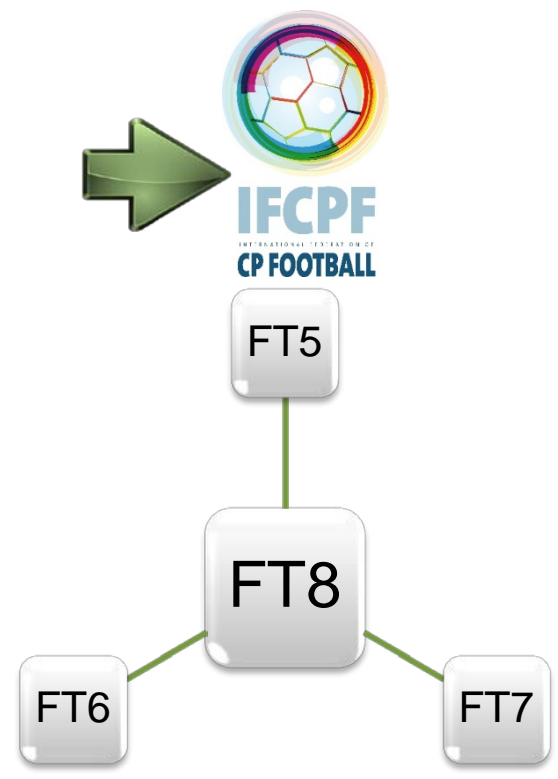




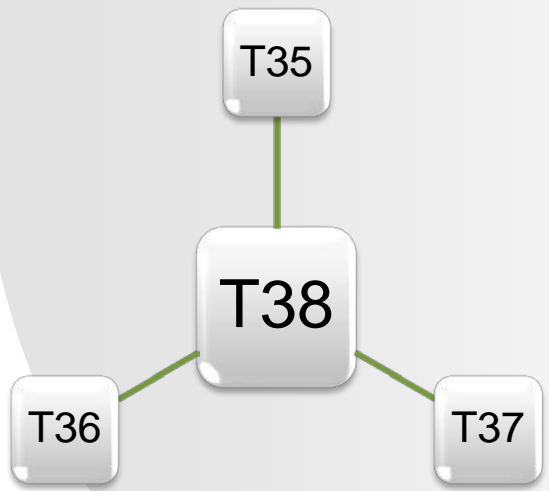
Research Problem



The Cut-Point Problem



IPC ATHLETICS



Research Aim

→ To develop measurable, objective criteria which can be incorporated into the current class profiles for classes in order to improve the reliability of the decision-making.



Participants



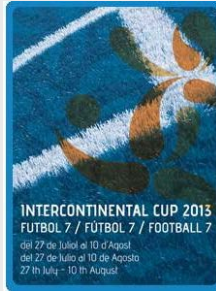
IPC Athletics = 11



CP Football = 7



Methods



- 16 Motor Test
- 5 Football Test



- Categories Design
- Pilot Study (n=3)



- Participants Recruitment
- 28 Athletes Observed
- Data Collection





Results Legend

C **Coordination**, defined as the ability to voluntarily execute fluid, accurate movements rapidly.

B **Balance**, defined as the ability to maintain the line of gravity (vertical line from centre of mass) of a body within the base of support with minimal postural sway.

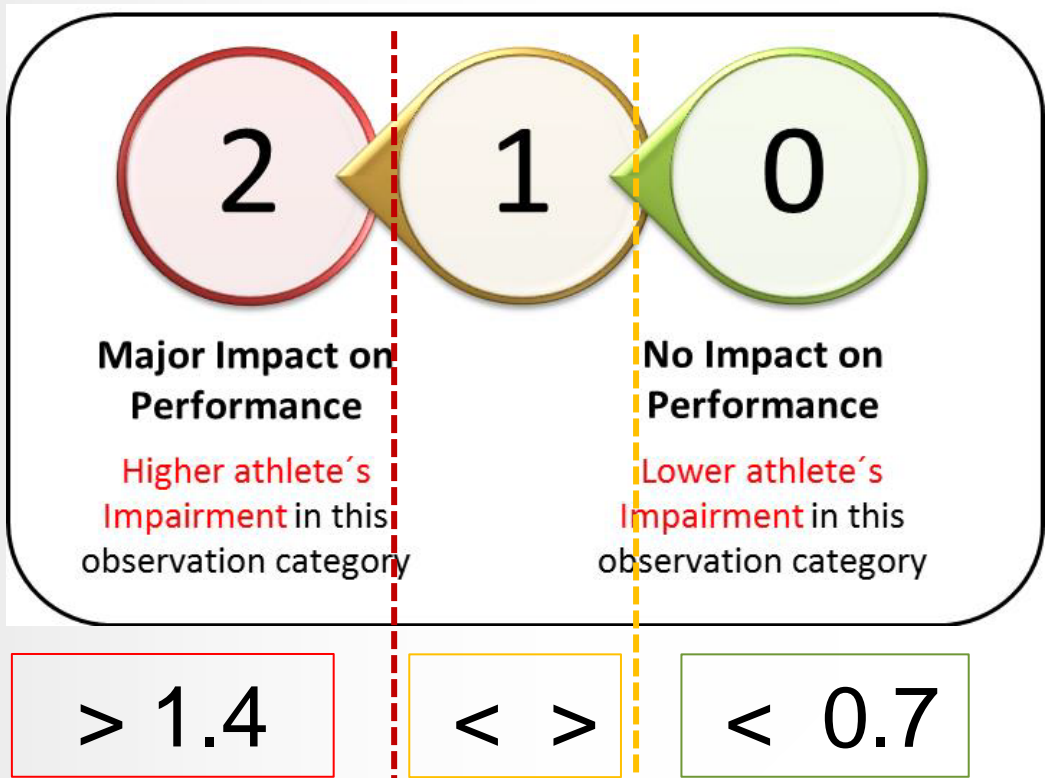
S **Symmetry**, defined as the correspondence and/or movement similarity on opposite sides of a dividing line or plane.

R **Range of movement**, defined as the full movement or optimal potential of a joint, usually its range of flexion and extension.

A **Arm impairment**, defined as the contribution of the arms to perform the whole movement.

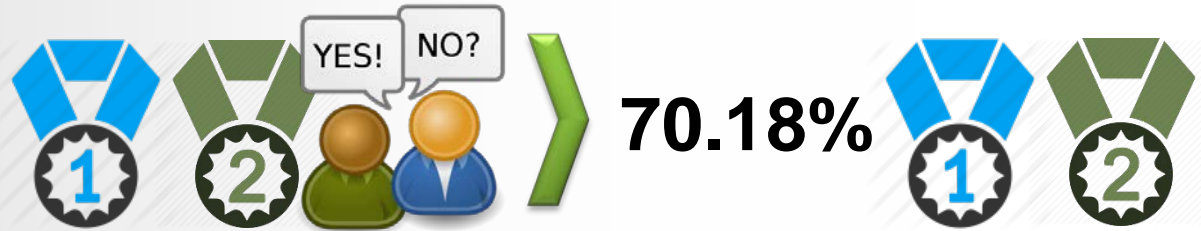


Results Legend





Results: T35 / FT5








| | | | | | | | |
|---------------------|----------|----------|---------|--------------------------|----------|----------|---------|
| Side-Step test | R | B | 51.47 % | 1 MAT Test | R | S | 64.71 % |
| 3 RHT | C | R | 54.41 % | Hexagon Hop Test | R | C | 64.71 % |
| Split Jumps | R | C | 50.00 % | 2 Triple Hop | R | B | 64.71 % |
| Side-Stepping | R | S | 47.05 % | Four Bounds for Distance | R | S | 62.69 % |
| Running in place | C | S | 47.06 % | 10m Speed Skip | R | C | 64.71 % |
| Tandem Walk | B | S | 40.91 % | Stop and go | R | C | 69.12 % |
| Standing Broad Jump | R | B | 50.77 % | 40 m Sprint | R | A | 56.07 % |



Results: T36 / FT6



| | | | | | | | |
|--|----------|----------|---------|--|----------|----------|---------|
| Side-Step test | B | A | 47.93 % | MAT Test | C | S | 44.12 % |
|  RHT | C | R | 42.98 % |  Hexagon | C | B | 47.50 % |
|  Split Jumps | C | A | 60.33 % |  Triple Hop | B | C | 48.76 % |
| Side-Stepping | C | S | 39.83 % | Four Bounds for Distance | C | B | 41.74 % |
| Running in place | C | S | 44.54 % | 10m Speed Skip | A | C | 31.94 % |
|  Tandem W | B | S | 42.85 % | Stop and go | B | A | 42.86 % |
| Standing Broad Jump | B | C | 54.08 % | 40 m Sprint | A | R | 20.69 % |



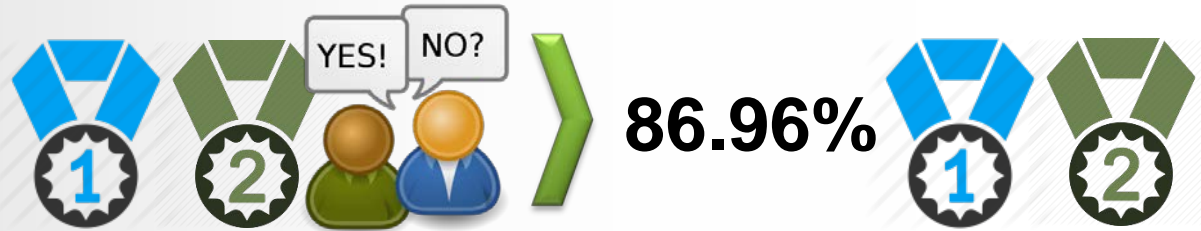
Results: T37 / FT7

86.02%
One Leg Stance

| | | | | | | | |
|---------------------|----------|----------|---------|--------------------------|----------|----------|---------|
| Side-Step test | B | A | 85.52 % | MAT Test | S | R | 73.51 % |
| RHT | C | R | 90.13 % | Hexagon Hop Test | S | R | 76.32 % |
| Split Jumps | S | A | 76.97 % | Triple Hop | B | R | 86.71 % |
| Side-Stepping | S | R | 80.79 % | Four Bounds for Distance | S | R | 75.83 % |
| Running in place | S | C | 70.00 % | 10m Speed Skip | S | R | 82.55 % |
| Tandem Walk | B | S | 61.84 % | Stop and go | S | R | 80.13 % |
| Standing Broad Jump | S | R | 83.33 % | 40 m Sprint | S | R | 66.67 % |



Results: T38 / FT8

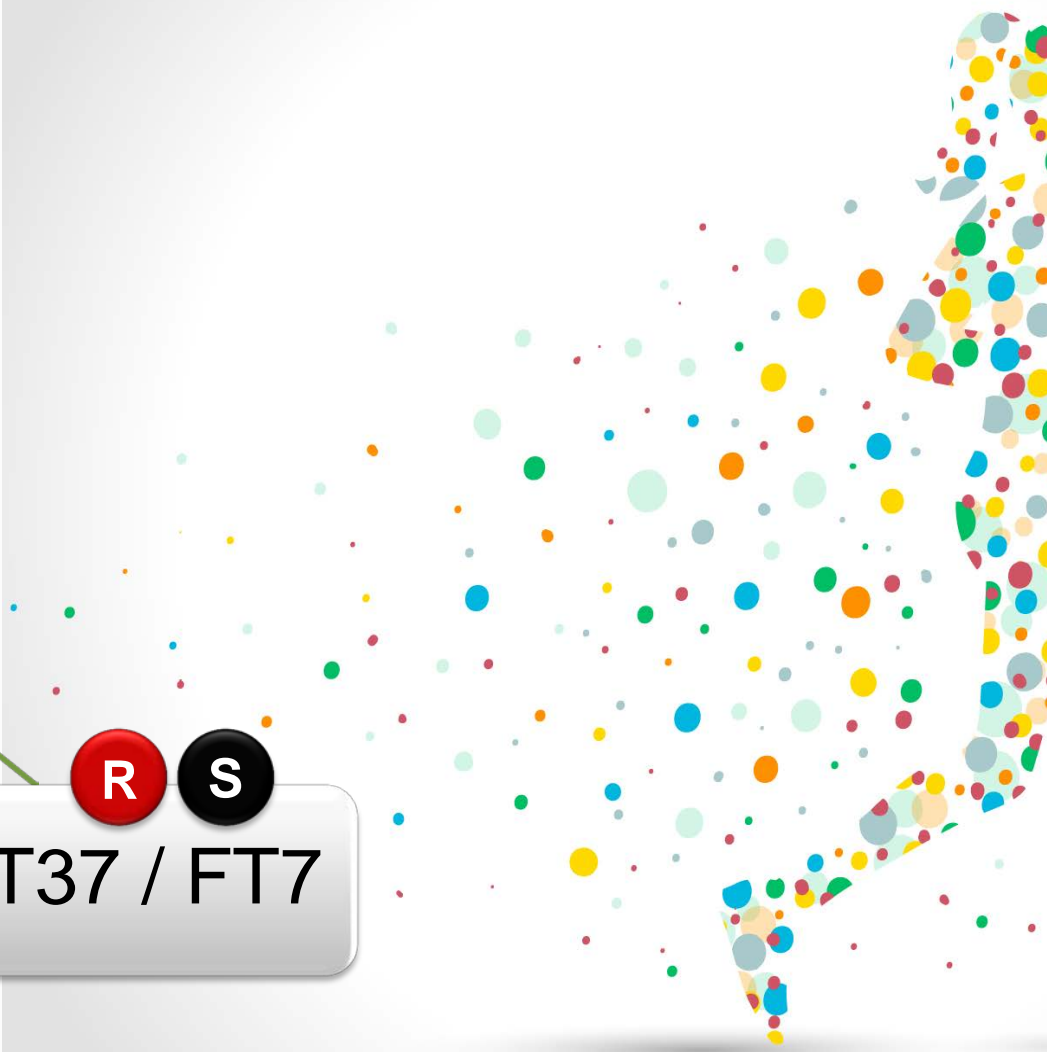
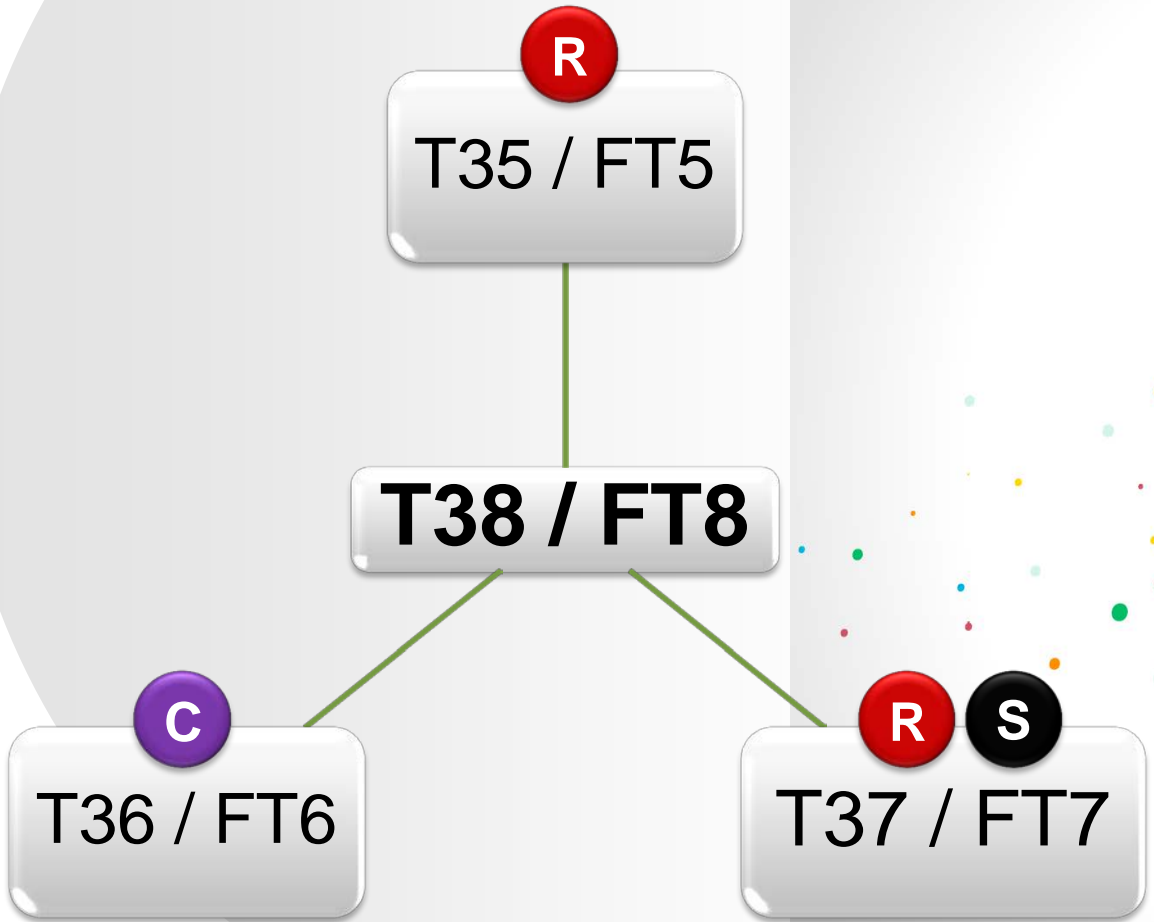


| | | | | | | | |
|---------------------|----------|----------|---------|--------------------------|----------|----------|---------|
| Side-Step test | A | B | 68.18 % | MAT Test | S | R | 82.00 % |
| RHT | C | R | 68.18 % | Hexagon Hop Test | C | S | 82.26 % |
| MAT Test | C | A | 61.90 % | Triple Hop | B | R | 76.98 % |
| Side-Stepping | S | R | 92.56 % | Four Bounds for Distance | S | A | 82.61 % |
| Running in place | C | S | 84.62 % | 10m Speed Skip | A | R | 81.45 % |
| Tandem Walk | B | S | 86.40 % | Stop and go | S | A | 82.64 % |
| Standing Broad Jump | S | A | 83.33 % | 40 m Sprint | A | R | 86.55 % |





Project Outcome





Project Outcome

3.1.3.1 Class T35

Diplegic – moderate involvement: This athlete may require the use of assistive devices in walking but not necessarily when standing. A shift of centre of gravity may lead to loss of balance. A Triplegic may appear in this Class.

Upper extremities – this is an area where variation occurs. Some moderate to minimal limitation in upper extremities can often be seen particularly when throwing, but strength is within normal limits.

Lower extremities – spasticity Grade 3 to 2: Involvement of one or both legs which may require assistive devices for walking. A Class T35 athlete must have sufficient function to run on the track. Athletes who can perform this task but with difficulty should consider competing in wheelchair racing in Class T34 (Section 3.3).

Balance – usually has normal static balance but exhibits problems in dynamic balance.

Project Outcome



MAT Test

Triple Hop

RHT

- Limited ROM in hips (needed to turn the whole body).
- Poor dynamic running pattern (particularly when running backward)
- Presence of scissor running pattern:
 - Hip and knee flexion
 - Hip adduction and internal rotation
- Performance:
 - Difficulty for stopping and accelerating
 - Difficulty assisting movements of the upper limbs when running
- Poor agility level.

Conclusions

- Positive feedback from participants to improve current classification profiles.
- Triple Hop and RHT are reported as the best tests for decision-making.
- Lower consensus in cut-point T36/FT6 v T38/FT8 with regard current class.
- Ratio-Scaled and Observation Categories could be applied to check activity limitation.

