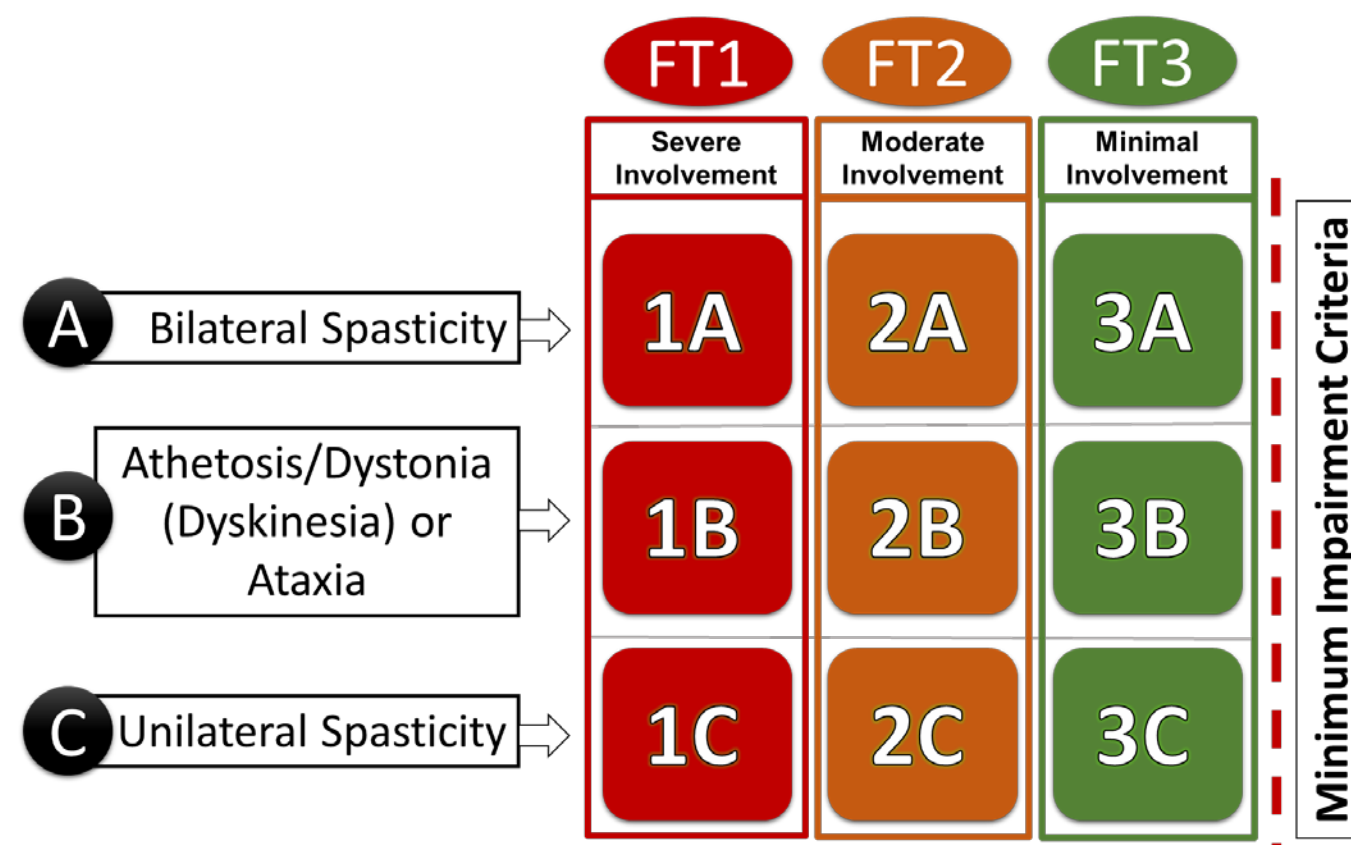


## INTRODUCTION

- CP Football is practiced by para-athletes who present brain damage (i.e. cerebral palsy or traumatic brain injury) [1]
- The eligibility impairments to compete in CP football are: Hypertonia, Ataxia or Athetosis [1]
- A brain damage usually impacts on athletes' STABILITY [2], and therefore, their ability to perform different sports skills.
- Grouping athletes according to how their impairments severity impact on the different skills required for the game. The final aim is to ensure a fair competition [3]

- The International Paralympic Committee stated the development of classification systems, specific to each para-sport and evidence-based [3]



### STUDY AIMS

1. Assessing the reliability of the One Leg Stance (OLS) test.
2. Comparing the performance of the test in para-athletes with and without brain damage.
3. Comparing the performance of para-footballers with different sport classes (i.e. FT1, FT2 and FT3).

## METHODS

### SAMPLE

- A sample of 180 male CP Football players, from 24 national teams, and with representation of the 5 continents.

Table 1. Descriptive data of CP-football players.

Class	N	Age (yrs)
GC	12	29.7 ± 6.75
FT1	43	25.2 ± 6.54
FT2	105	25.6 ± 5.99
FT3	32	28.5 ± 6.54



### MEASUREMENTS

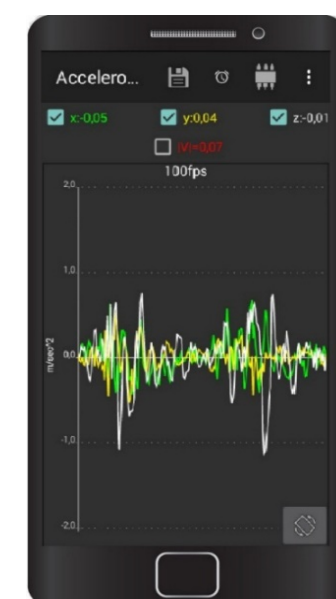


Figure 1. Smartphone Huawei P10 Lite running the APP of "Accelerometer Analyzer"



Figure 2. Placement of the device in the posterior superior iliac spines.



Figure 3. Two series of 30 s with more and less affected legs.

OUTCOMES: Mean acceleration (MA) and number of supports/contacts.

### PROCEDURE

- Data collection carried out in 4 regional competitions held in 2018, recognized by the IFCPF.
- Data collection was conducted parallel to athletes' classification by classification research staff.
- Information about research aims was provided to all the participants prior data collection.

### DATA ANALYSES

- Relative Reliability: Intra-class Correlation Coefficient (ICC<sub>2,1</sub>)
- Absolute Reliability: Standard error of measurement (SEM%)
- Differences between-groups: One-way ANOVA.

## RESULTS

### ONE LEG STANCE OUTCOMES

Table 2. Relative (ICC) and absolute (SEM) reliability scores considering sport classes (FT1, FT2 and FT3) and leg (less vs more affected)

	RELIABILITY					
	LESS AFFECTED			MORE AFFECTED		
	FT1	FT2	FT3	FT1	FT2	FT3
ICC	0.95	0.95	0.94	0.92	0.90	0.96
SEM%	22.01	20.77	14.2	17.96	18.22	12.82

Table 3. Number of contacts/supports during testing.

	MEAN OF CONTACTS/SUPPORTS			
	FT1	FT2	FT3	CG
LESS AFFECTED	1.29	0.39	0.12	0.0
MORE AFFECTED	4.55	4.01	2.74	0.0

Table 4. Correlations between mean acceleration (MA) and the number of contacts/supports.

	CORRELATIONS MA VS NUMBER CONTACTS	
	LESS AFFECTED	MORE AFFECTED
r	0.359	0.447
p	< 0.001	< 0.001

### BETWEEN-GROUPS COMPARISONS

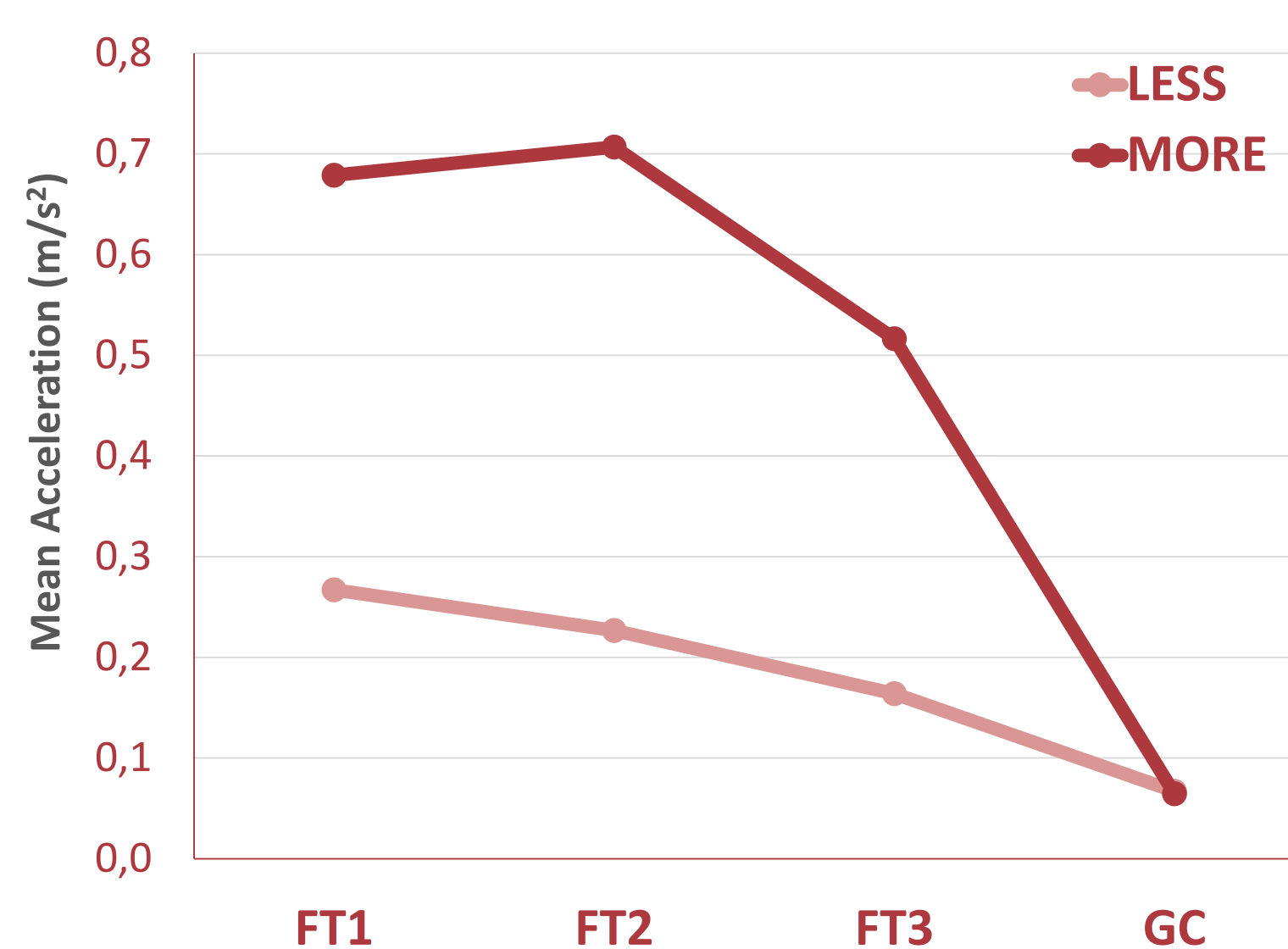


Figure 4. Comparison in stability control between para-footballers with CP and the control group.

$p < 0.001$ : less affected vs more affected

### STABILITY CONTROL BETWEEN LEGS

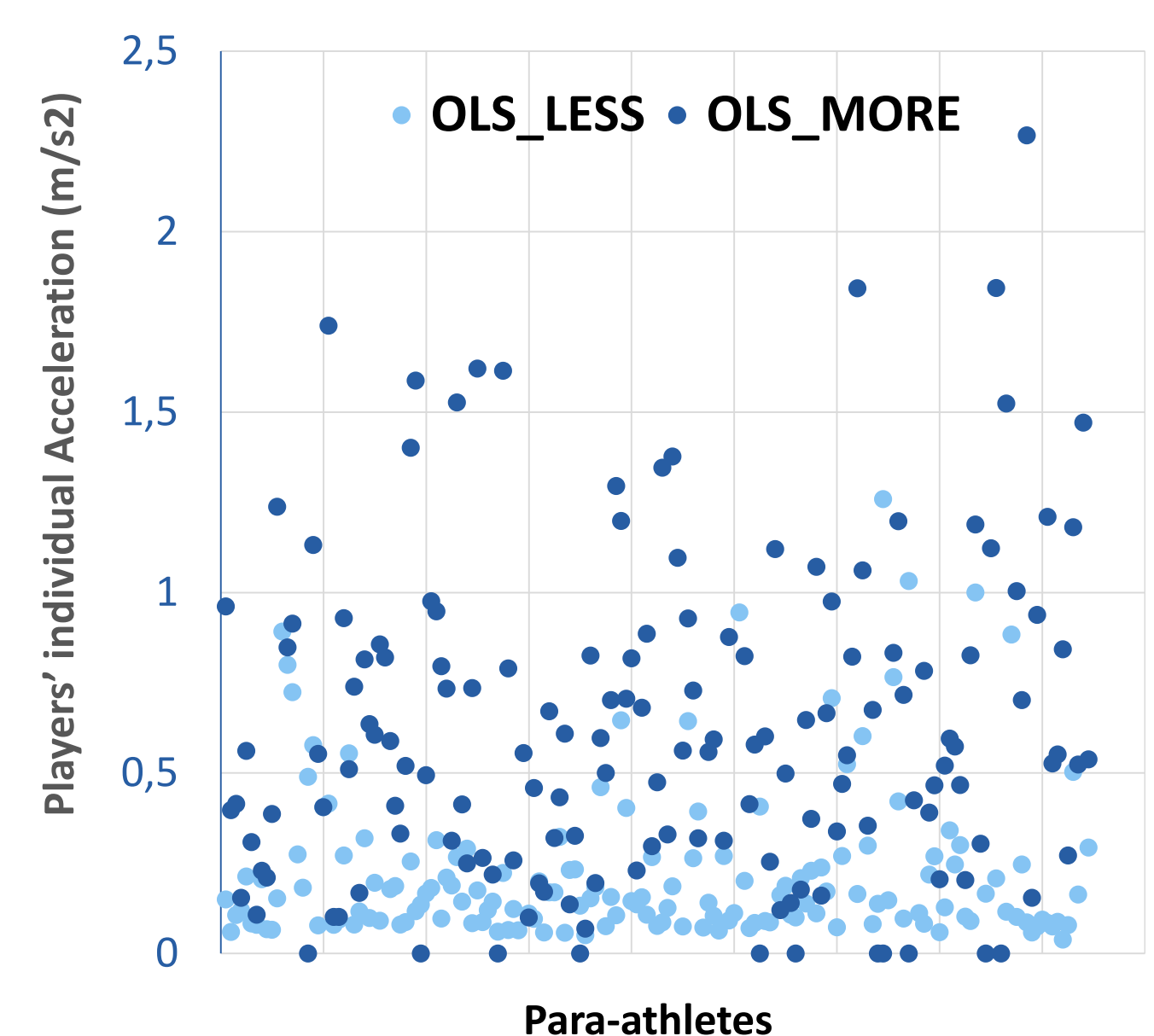


Figure 5. Relationships in stability control in all the para-footballers with cerebral palsy considering less and more affected legs.

## CONCLUSIONS

- The OLS test might be a useful and reliable tool to assess impaired balance in para-athletes with cerebral palsy.
- This protocol allowed to discriminate between different levels of impairment per leg.
- Further analyses are needed to explore the effect of the type of impairment in relation to the number of contacts made during testing.

