



ISAPA2021
INTERNATIONAL SYMPOSIUM OF ADAPTED PHYSICAL ACTIVITY

Development of an Observational Scale to Assess Motor Coordination in Para-Footballers with Cerebral Palsy.

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INTERNATIONAL FEDERATION OF
CP FOOTBALL

Introduction

- **Cerebral palsy (CP)** football is a team para-sport for ambulant para-athletes with eligible impairments of **hypertonia, athetosis, or ataxia**.
- **Coordination** is one of the affected dimensions in people with CP and, the literature is controversial about the impact of **coordination impairments** on the activity limitation during the **classification process**.
- The **classification system** favor the participation of people with disabilities.



Connick et al. (2015); Hogarth et al. (2019); Runciman & Derman (2018); van der Linden et al. (2018)



Aim

The **Rapid Heel Toe (RHT)**, **Split Jumps**, and **Side-Stepping** tests were used in previous studies.

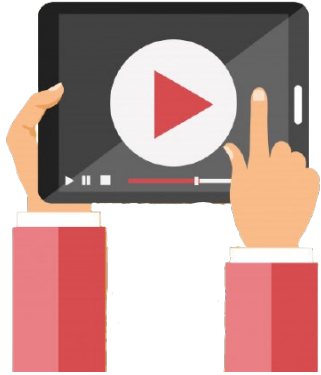
The **RHT** could be relevant to define **the minimum impairment criteria** in the classification process (i.e., eligibility) of para-footballers with CP.

The motor strategies used to achieve their performance have not been analyzed and are probably influenced by the **players' functional profile and degree of impairment**.

This study aims to **develop a descriptive observation-based scale to assess impaired coordination** in CP footballers when executing a **tapping test** with the lower limbs.



Methods



13 National teams
2019 IFCPF World
Championship in Spain

Spasticity bilateral (n=14)
Ataxia (n=5)
Athetosis (n=11)
Spasticity unilateral (n=11)

More affected leg
Less affected leg

Rapid heel-toe placement (RHT)



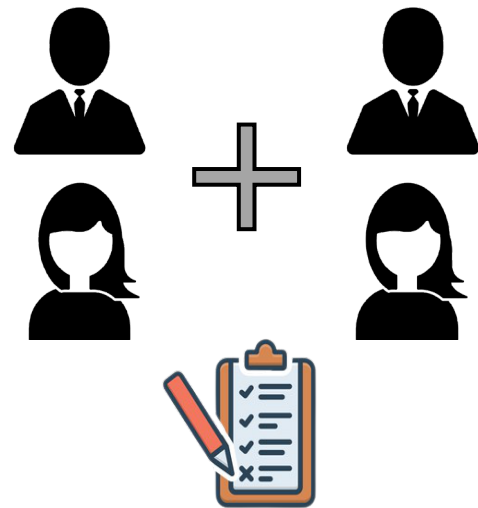
25 rapid dorsi- and plantar-flexions



Two independent researchers analyzed the videos and registered the most impaired observed features throughout an ad-hoc data collection tool.



Methods



Internal Validation

Invited classifiers



Sport Technician



Sport Technician



Physiotherapist



Physician



Experts Agreement

Two researchers designed a coordination assessment instrument, and the other two researchers reviewed the instrument; The researchers discussed the content considering all the key aspects observed during the task.



A pilot study of content validation in Spanish language was performed. 4 experts classifiers were invited to complete a questionnaire with quantitative and qualitative questions.



A final version of the coordination instrument was obtained considering the feedback provided by the experts.

Results:

Coordination Assessment Instrument

Range of movement

Temporal features and characteristics of the movements

Tapping accuracy

Compensatory strategies

Rapid Heel Toe - Tapping Test

Categories	More affected	Less affected	Profile A	Profile B.1	Profile B.2	Profile C
			(Bilateral Spasticity)	(Ataxia)	(Diskinesia)	(Unilateral Spasticity)
Others	Yes (1)	No (0)	Add a point (1) if your answer is YES, or zero points (0) if your answer is NO, for the following statements:			
			At the end of the test with both limbs. Do you observe an asymmetry in the execution of the task?			
			During the execution of the test, associated reactions are observed that interfere with the trunk's stabilization or in the performance of the test?			
			During the execution of the test, clonus is observed that interferes with the performance of the test?			
			Points			

Results: Content Validation

75% believe it is necessary to **develop** impairment-specific **coordination scales**.

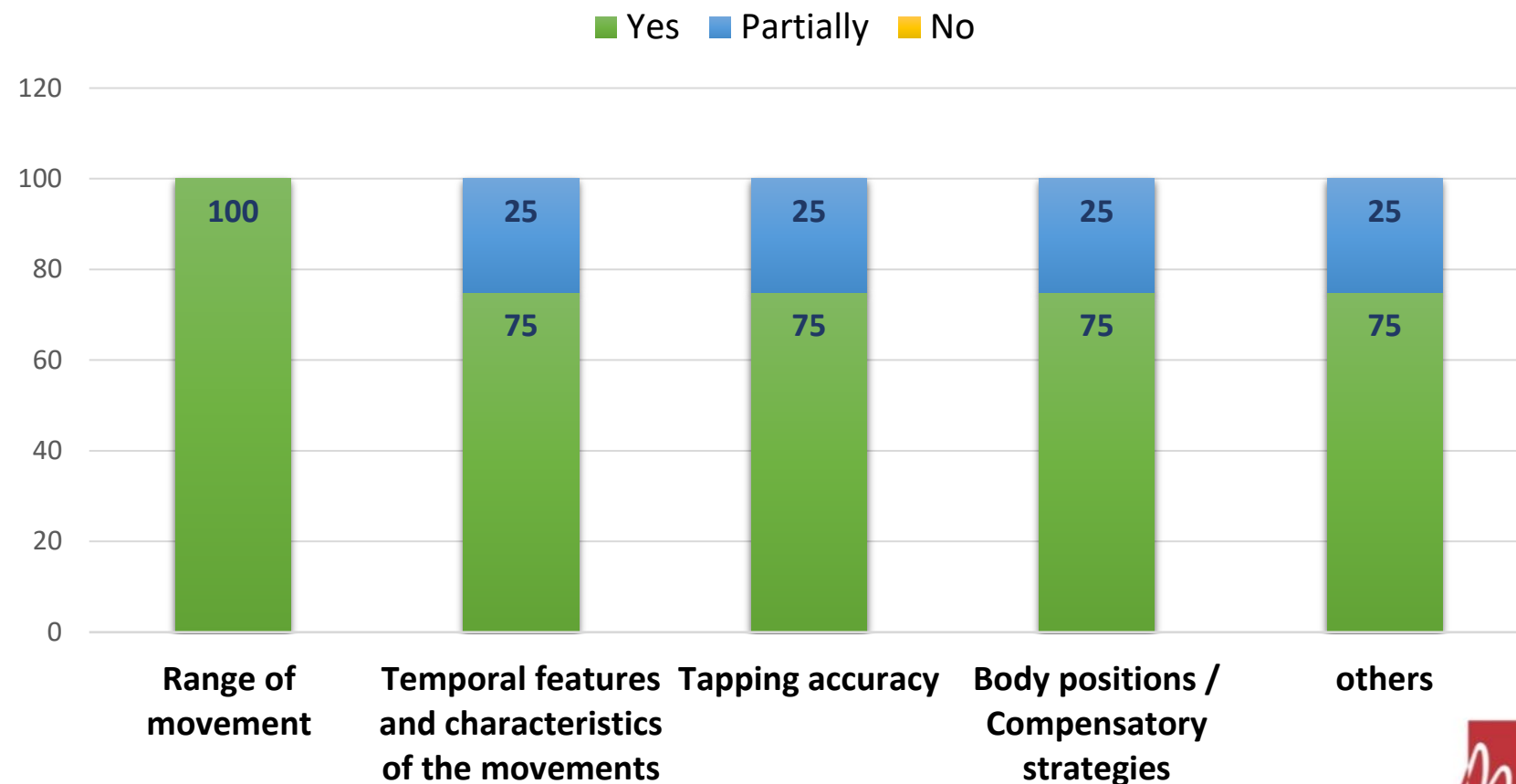


100% report that **coordination** affects athletes with **ataxia** or **athetosis**, and 75% hypertonia.



75% of participants experts believe that this instrument can be used to **assess** **coordination**.

Degree of understanding and agreement of dimensions



Discussion



A **descriptive scale based on observation** was developed to evaluate the **impairment of coordination** in para-footballers with CP when performing a tapping test.



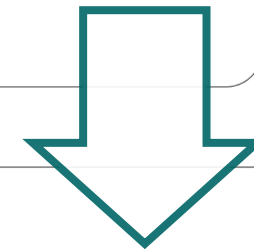
The **RHT** is one of the tests that best discriminate between **affected legs among footballers with CP**. The rapid movements of plantar- and dorsi-flexions observed in this test could be related to motor actions necessary to perform football skills.

Activity limitation in jumping, running, changes of direction and stability tests may be **different in CP profiles**. Therefore, it is relevant to consider the **qualitative and quantitative** components of test performance.



Conclusion

The observation scale that has been proposed provides **useful information** about how para-footballers with CP perform the movements required in the rapid heel-toe test, considering **each specific impairment** and its functional profile characteristics.



The development of this type of observation tool would help classifiers identify **eligibility parameters**, supporting decision-making for sports class allocation, especially in those with **coordination impairments**.



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