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DESIGN OF THE STANDARDS ABOUT THE ACCURACY
CAPACITY OF THE BOCCE PLAYERS

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Abstract

The paper is based on the evaluation of specific skills for the bocce game in Down syndrome persons. In the context of analysing the motor level of these persons, we took and redesigned two tests from the *Bocce Coaching Guide* (Special Olympics, 2006). These tests address the accuracy of launching the bocce ball and framing it into the bordered space of a coloured rectangle. Depending on performance, one or two points are granted. Each player receives two launches for each test and the obtained points are added. Our preoccupation is to identify the general standards in connection with the direction and control, coordination and accuracy capacity which are specific for bocce players. At the same time, we want to make a database which we or other interested persons can use in our or their future research. The target of the paper is to disseminate the data obtained in the accuracy test applied to the Down syndrome persons who attended the bocce event organized on the World Down Syndrome Day. The results present the minimum, maximum and average values achieved by our subjects. We consider that the obtained results represent a starting point for improving bocce – specific bocce skills for both players and specialists. At the same time, the results represent important landmarks for the “Sport together, active forever” Project, which is co-funded by the Erasmus+ Programme of the European Union.

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1. Introduction

A component of the coordination capacity, according to some authors (Weineck, 1992; Manno, 1992; Bota, 2000), or psychomotricity, according to other authors (Stănescu, 2003; Ochiană, 2006; Epuran, 2011), precision is one of the features by which the execution of a movement is either individual or integrated into a “complex motor set” (Epuran, 2011, p. 31).

Throughout the motor learning process, the practice of the same movement in similar conditions determines the occurrence of stereotypes which are executed with great precision. The problem arises with unknown movements, where the individual’s skills have an impact on the quality of motor acts/ actions. These must be executed with a “sufficiently high precision so as to provide a satisfying gestural solution” (Tudor, 1999, p. 97). The accurate execution of movements determines the delay of fatigue (Bota, 2000) and their correct fitting in space and time (Zațiorski, 1968, p. 129). Moreover, precision allows the individual to control his/her motor actions and perform them with low energy consumption (Zațiorski, 1968; Bota, 2000) and maximum efficiency.

The individual performs movements in space. They are all the more precise as the one executing them correctly perceives the distance that must be reached by the object to be released to the set fixed point. Zațiorski (1968) is of the opinion that “the most common inaccurate estimation of space” consists in the inaccurate estimation of the distance to any object” (p. 144).

2. Problem Statement

Children with Down syndrome show a delay in the initial phases of motor development. There is a large variability in their progress, some children getting through these phases faster, others developing normally, while other children are much slower. The study of specialised literature highlighted the existence of different opinions regarding the progress of motor development in children with Down syndrome compared to normosomic children.

Thus, certain specialists support the idea that this development is slower (Mureșan & Coman, 2011), and others argue in favour of the idea that this motor development is similar to the one of normosomic children if their mental age is compared, not their chronological age (Sacks & Buckley, 2003). Differences are due to the physical modifications occurring in the musculoskeletal system (muscles and ligaments) and the central nervous system (Sacks & Buckley, 2003). Moreover, it has been demonstrated that motor retardation may be “equal to mental deficiency” (Teodorescu, Bota, & Stănescu, 2007, p. 143) or motor skills are “more deficient than mental skills” (Lautslager, 2005, p. 22).

Most of the children with Down syndrome learn the basic motor skills. Their movements are less refined, but they can develop skills appropriate for the performance of their daily and sport activities. They may encounter difficulties in the practice of certain games and recreational activities, but many of them can reach high levels when they are helped (Sacks & Buckley, 2003; Mureșan & Coman, 2011; Neagu & Papp, 2012). Obviously, deficiencies also occur in movement execution, which also lacks precision (Stănescu, 2002). This issue is underlined by Sacks and Buckley (2003), who associate the lack of movement precision with problems related to the execution of speed movements.

As all sport movements are performed in space and time (Zațiorski, 1968), precision must be educated through specific means. Sacks and Buckley (2003) state that both precision and speed are

developed by practicing certain movements which require fine motor control; but practice needs a time period twice longer than for an individual with the same mental age (p. 137).

3. Research Questions

The application of certain evaluation tests can lead to the design of reference criteria regarding movement precision in subjects with Down syndrome practicing the bocce game.

4. Purpose of the Study

The target of the paper is to disseminate the data obtained in the accuracy test applied to the Down syndrome persons who attended the bocce event organized on the World Down Syndrome Day. At the same time, we want to make a database which we or other interested persons can use in our or their future research.

5. Research Methods

5.1. Research methods used for conducting the study

- The documentation method, which helped us study the specialised literature published in the country or abroad regarding the theoretical framing of precision. Articles presented on specialised websites were consulted in order to obtain data on the connection between precision and motor activities performed by persons with Down syndrome;
- The experimental method, which helped us provoke the observation of precision in athletes from the group undergoing two tests that they had not previously practiced. The verification experiment is based on this method.
- The statistical and mathematical method, which allowed us to determine the minimum and maximum values in the data series acquired and the average values obtained by our subjects.
- The graphical method, which helped us underline the obtained results.

5.2. Applied control tests

Two tests for the accuracy evaluation were taken from the *Bocce Coaching Guide* (Special Olympics, 2006) and redesigned.

Athletes roll the balls down the court towards a colour rectangle (the rectangle = 25 A4 colour pages). They must cross the ball over the centre court line and stop it inside the colour rectangle. When they launch the ball, they must not pass over/above the start line.

The athlete has two launches for each two-colour rectangles. The teacher or the volunteer writes down where the ball stops: 2 points if it stops inside the rectangle and 1 point if the ball is not inside it.

The first rectangle, on the right side of the court as the athlete looks at, is placed 1.50 m up from the centre court line. It has 1 m from the border up to its lateral border.

The second rectangle is placed before the opposite start line, on the left side of the court as the athlete looks at. It has 1.50 m from the left border of the court and is 1 m lower than the opposite start line.

5.3. Subjects

On the occasion of the above-mentioned competition, 44 athletes with Down syndrome (18 girls and 26 boys) were evaluated. Of the 44 athletes, half were adults (22) and half were children (22) on the test date. The discussion on the collected data was also based on this distribution, because the age of the tested subjects was not homogeneous.

To note that the research took into consideration the provisions of WMA Declaration of Helsinki (2013) on the ethical principles for the studies conducted on human subjects.

6. Findings

In the first test (with the rectangle located on the right side, in the throwing direction), only 4 athletes (3 adults and one child – 2 girls and 2 boys) managed to place the bocce ball in the area marked as a fixed point. All 4 scores were successful at the second launching.

In the test on the left side, also 4 ball placements in the rectangle taken as a fixed point were successful. But 2 were successful at the first launch (one girl and one boy – both children) and 2 at the second launch (one girl – child and one adult – boy). Only one athlete (child) managed to place the ball in the rectangles taken as fixed points in both testing situations.

In the statistical tests we performed, we did not refer to the minimum and maximum values of individual athletes, because they would have been 1 and 2, respectively. In our analysis, we interpreted the overall results obtained by athletes for each launching. Thus, the minimum value was 1-44 points at the first launching, and the maximum value was 48 points at the second launching. This value was obtained because the 4 athletes managed to place the ball inside the rectangle (Figure 01).

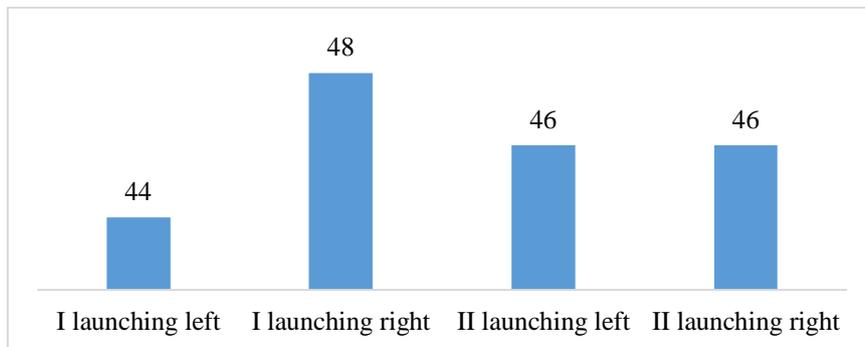


Figure 01. Overall results obtained by the athletes at each launching

In Figure 02, the average values of the obtained data are presented. They do not indicate a high homogeneity of the results achieved by each athlete.

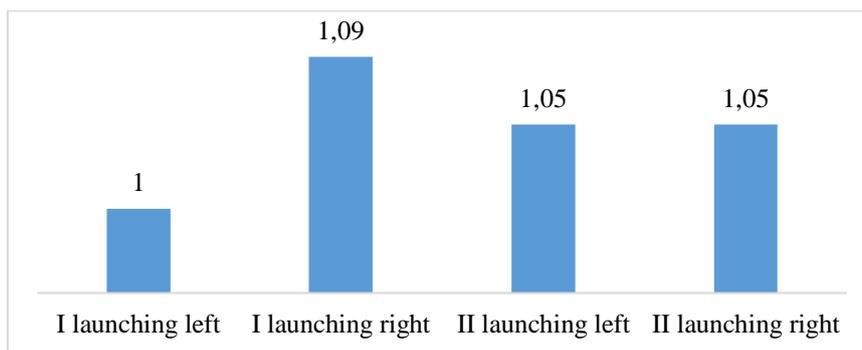


Figure 02. Average value for each launchin

7. Conclusion

Following the analysis and interpretation of the data available to us, as well as the consulted information and studies, we can conclude:

- The precise movement execution is determinant in sport for both athletes without disabilities and those with disabilities. It is one of the movement features on which the correct execution of motor acts/actions depends;
- Precision can be educated through physical exercises. The time required for this depends on each individual, their mental age playing an important role;
- The athletes with Down syndrome tested by us are deficient in the coordination precision, as they are in the other aspects, due to the nature of the syndrome from which they suffer;
- Athletes with Down syndrome do not make the difference between the hard launching of a ball and its slower launching. From our experience, we can state that young children launch the ball very slowly (it does not reach the middle of the field – 9 m). Adults launch the ball forcefully, tending to reach the edge of the field, but not the rectangle area indicated as a fixed point;
- The applied tests helped us collect a series of results on which future studies performed within this project will be based;
- However, children and adults with Down syndrome can educate their precision. The key is the practice accompanied by a lot of patience and the attention of the teacher/coach/volunteer.

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Authors’ contributions

All authors contributed equally to this study and should be considered as main authors.

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