Original Article

Sports talent identification in zimbabwe: a comparative study

Identificación de talentos deportivos en zimbabwe: Un estudio comparativo

Identificação de talentos do esporte no zimbabwe: um estudo comparativo

Islay Pérez Martínez[1]*, Juan José Alfonso Prendes[2], Yvonne Utaumire[2], Ariadna Quintana Díaz[1]

[1]University of Matanzas, Cuba. E-mail: ariadna.quintana@umcc.cu
[2]Bindura University of Science Education, Zimbabwe. E-mail: juanalfonsoprendes2016@gmail.com, yutaumire@gmail.com

ABSTRACT: The implementation of talent selection systems in Zimbabwe is complicated by the lack of qualified personnel, the high cost of tests, equipment and because the majority of the population is rural. This article makes a preliminary analysis with the first data collected in the Sport Talent Identification Project in Zimbabwe. The objective was to compare the statistical norms used to identify sports talent in Zimbabwe and Mexico. Theoretical and empirical scientific methods were used. The physical tests applied were: height, push-ups, sit-ups, long jump without running, speed and resistance. The values used in comparison are those of the 90th and 97th percentiles because they are the ones used to identify sports talents. Percentage significance was determined using the critical values of the sign test. In the comparison, the sample of the African country achieves outstanding results in most of the indicators analyzed. With these preliminary results, it cannot be established that the population of Zimbabwe has significant physical possibilities for practicing sports. However, it can be inferred that many of the children evaluated so far could be considered potential sports talents if they lived in Mexico.

Key words: talent identification, Sports, physical condition, Zimbabwe.

RESUMEN: La aplicación de sistemas para la selección de talentos en Zimbabwe es complicado por la falta de personal calificado, el alto costo de las pruebas, el equipo y porque la mayoría de la población es rural. Este artículo realiza un análisis preliminar con los primeros datos recopilados en el Proyecto de Identificación de Talentos para el Deporte en Zimbabwe. EL objetivo fue comparar las normas estadísticas utilizadas para identificar el talento deportivo en Zimbabwe y México. Se utilizaron métodos científicos teóricos y empíricos. Las pruebas físicas aplicadas fueron: altura, flexiones, abdominales, salto de longitud sin carrera, velocidad y resistencia. Los valores utilizados en comparación son los de los percentiles 90 y 97 porque son los que se utilizan para identificar los talentos deportivos. La significación porcentual se determinó utilizando los valores críticos de la prueba de signos. En la comparación, la muestra del país africano logra resultados sobresalientes en la mayoría de los indicadores analizados. Con estos resultados preliminares, no se puede establecer que la población de Zimbabwe posea importantes posibilidades físicas para la práctica deportiva. Sin embargo, se puede inferir que muchos de los niños evaluados hasta el momento podrían ser considerados posibles talentos deportivos si vivieran en México.

Palabras clave: identificación de talentos, Deportes, condición física, Zimbabwe.

RESUMO: A implementação de sistemas de seleção de talentos no Zimbábue é complicada pela falta de pessoal qualificado, o alto custo dos testes, equipamentos e porque a maioria da população é rural. Este artigo faz uma análise preliminar com os primeiros dados coletados no Projeto de Identificação de Talentos Esportivos no Zimbábue. O objetivo foi comparar as normas estatísticas utilizadas para identificar talentos esportivos no Zimbábue e no México. Foram utilizados métodos científicos teóricos e empíricos. Os testes físicos aplicados foram: altura, flexões, abdominais, salto em distância sem corrida, velocidade e resistência. Os valores usados na comparação são os dos percentis 90 e 97 porque são os usados para identificar talentos esportivos. A significância percentual foi determinada usando os valores críticos do teste de sinal. Na comparação, a amostra do país africano alcança resultados destacados na maioria dos indicadores analisados. Com estes resultados preliminares, não se pode afirmar que a população do Zimbabué tenha possibilidades físicas significativas para a prática desportiva. No entanto, pode-se inferir que muitas das crianças avaliadas até agora poderiam ser consideradas potenciais talentos esportivos se morassem no México.

Palavras-chave: Identificação de talentos, esportes, condição física, Zimbábue.

INTRODUCTION

Talents identification and sports initiation are important parts of the Theory and Methodology of Sports Training. Coaches and scientists are constantly looking for new ways and approaches for identifying boys and girls with potentialities for sports practice. In the specialized literature, it is possible to find several concepts about being a talent in sports. The majority agrees that there are individuals whose physical and psychic characteristics place them above the rest of the population regarding possibilities for successful development in the sport.

For example, a famous author like Zatsiorskij (1989) affirms that a sports talent is characterized by the combination of the physical and psychological capacities, as well as of the anatomical and physiologic aptitude; this combination produces the potential possibilities for the achievement of remarkable results in a specific sport.

There are several pedagogic tests that allow the identification of individuals with a particular characteristic for the practice of some sports. An example of this are the tests used for the Cuban Physical Education System(Pila, 2004).Those tests evaluate the physical capacities of strength, speed, flexibility, endurance, height, and weight. Representative statistical norms for the Cuban population were created using the results of those tests. Those norms establish percentiles from the 10th to the 97th. The children that obtain results located in the 90th percentile or above are considered as physical talents for the sports practice because they can achieve results that are only possible for the 10percent of the population. When the statistical norm of the percentiles has been established the same test can be applied to any child in every part of the country.

Zimbabwe is a country with similar conditions to Cuba as for inhabitants' number, besides being an underdeveloped country. The application of complex systems of talents identification is complicated by qualified personnel's lack, the high cost of the tests, and because most of the population is rural. To impel the development of the sport, countries like Zimbabwe need to optimize to the maximum the use of the available resources. In this case, the use of tests to determine the level of development of the physical qualities in the children and adolescents is ideal for its low cost, and because any teacher of Physical Education can apply them appropriately.

Intending to elaborate a database that allows creating a representative statistical norm for Zimbabwe, the Department of Sports Sciences of Bindura University has been developing the project of Talents Identification for Sports in Zimbabwe.

This paper allows us to make a preliminary analysis with the first data gathered in the Project of Talents Identification for Sports in Zimbabwe. For this analysis, our Aim was:

To compare the statistical norms used to identify sports talent in Zimbabwe and Mexico. The comparison is made for supporting the analysis and demonstrating the importance of Zimbabwe having its statistical norm. However, it is important to point out that the data of norms from a country cannot be used to identify talents in another country, because they are elaborated from the population's characteristics, and those vary in the different countries for different reasons.

MATERIALS AND METHODS

The research can be classified as cross-sectional and descriptive. Theoretical and empirical methods were used as research methods. The theoretical methods were Historical-logical, Analytical-Synthetic, Induction-deduction, and Measurement from the empirical ones. The physical tests used were: height, push-ups, sit-ups, long jump without a run-up, speed, and endurance. In the case of the speed test, both genders up to twelve years old ran 30 meters, and 12-year-old boys and girls ran 50 meters. For the Endurance test both genders up to twelve ran 400 meters, and 13-year-old kids ran 800 meters.

The tests were applied in a single work session, except the endurance, which was carried out another day. The methodological order of realization was the following: height, speed, push-ups, sit-ups, jump of longitude without a run-up, and endurance. The tests were carried out on a plane surface, in the majority of the cases on grass. The endurance test was performed on an athletics track. In all the cases the test was carried out using sports clothes, shorts, t-shirts, and tennis.

The analysis was made with the sample collected until the moment of the project. Using a simple random sampling it was chosen a group of 320 boys and 259 girls between the ages of eleven to fourteen (Table 1), from 24 schools of seven provinces (Table 2). The used age was the chronological one, considering the year of life that it is living, not the fulfilled years. The statistical norm established for the Mexican population was obtained from the study conducted in the national research Escolar Penthathlon carried out in Mexico (Pila, 2004). That research was developed by using the same tests that are used in our study. The results were processed using the software SPSS version 21. Two percentiles were elaborated for each one of the four ages using the results from all the individuals. The values used in the comparison are those of the 90th and 97th percentiles because those are the ones used to identify sports talents. The percentage significance ratio was determined using The Critical Values of the Sign Test.

RESULTS AND DISCUSSION

The first analysis was with the values of the 90th percentile of the feminine samples of Zimbabwe and those of the norm of Mexico for the tests of speed, push-ups, sit-ups, jump of longitude without a run-up, and aerobic endurance (Table 3).

In the test of speed, the sample of Zimbabwe got a superior result in the ages of fourteen, thirteen, and eleven years. In the case of the 12-year-old age, the 90th percentile of Mexico was higher. In the test used to measure the strength of arms and shoulders, the results were similar between both samples. For the 14-year-old age, the values were 25 push-ups repetitions for both samples. In the ages of thirteen and twelve years the values of the 90th percentile were better in the Mexican norm, but in 11-year-old age, the result changed in favor of the sample of the African country. Interestingly, the value of the 90th percentile of the sample of Zimbabwe for the 11-year-old age is superior to the 14-year-old age. The cause should be that the sample is still limited to form a definitive national norm.

In the cases of the tests carried out to determine the strength of the abdomen, the strength of legs, and the aerobic endurance, all the percentiles of the sample of Zimbabwe were superior to the Mexican norm. In the case of the feminine sample, from 20 indicators analyzed, in 17 of them the African sample possessed a superior result for 85%, and a statistical significance of 0,005.

Table 4 shows the values of the 90th percentile of the masculine sample for the five applied physical tests. When analyzing the data on the table, it is possible to appreciate a wide superiority in all the tests for the results achieved by the sample of Zimbabwe. The exception is located in the 12-year-old age in the 90th percentile for the tests of speed and endurance. Only in those cases, a better value is established for the statistical norm used in the Latin American country to identify talents.

The comparison between the statistical norm of Mexico and the data registered until the moment in Zimbabwe show better values in the 90th percentile for the African country. That result is translated into a

Table 1. *The Sample Used for the Preliminary Analysis*

Years	Girls	Boys	Total
11	48	49	97
12	59	58	117
13	63	85	148
14	89	128	217
Total	259	320	579

Table 2. *Distribution of the Number of Schools for Counties Used in the Sample*

Province	Schools
Harare	6
Mashonaland West	2
Mashonaland East	5
Mashonaland Central	7
Manicaland	2
Bulawayo	1
Midlands	1
Total	24

Table 3. *90 th Percentile for the Different Ages in the Physical Tests, Female Samples*

Test	14 years	13 years	12 years	11 years
Speed Zimbabwe (sec)	7,33	8,09	8,33	5,2
Speed Mexico (sec)	8,2	8,2	7,2	5,6
Push-up Zimbabwe (rep)	25	19	23	26
Push-up Mexico(rep)	25	24	24	23
Abdominal Zimbabwe (rep)	43	41	30	43
Abdominal Mexico (rep)	26	25	25	23
Jump Zimbabwe (cm)	176	171	180	175
Jump Mexico (cm)	160	158	155	148
Endurance Zimbabwe (min)	4,17	4,16	4,03	2,2
Endurance Mexico (min)	4,29	4,29	4,06	2,42

Note: Values where Zimbabwe gets a lower result appear in red

bigger demand to consider as sports talent to a child in Zimbabwe than in Mexico.

Two of the causes of these superior results achieved by the Zimbabwe sample may be the predominant rural population of the country and the material limitations. The main playful activities of children are related to physical activities. At the same time, many of them start working at an early age to support the family.

Of course, as it has been mentioned previously the data used to elaborate the percentiles of the sample of the African nation belong to a sample that is not still representative of the whole population of the country for the different ages. These values are not conclusive, but they mark a tendency in results. In the comparison of the masculine sample, the Southern African country gets outstanding or similar results in 18 of the 20 indicators; that represents 90% with a statistical significance of 0,001 by the use of the Critical Values of the Sign Test.

Table 5 shows the 97[th]percentile values for the height of the different ages analyzed in both sexes. In six cases, the 97[th]percentile of the Mexican norm was higher than the result of the Zimbabwean sample. Except in the ages of 12 and 13 years in the female sex where the values of the African country are equal and higher respectively.

These values can be influenced by uneven levels of caloric and protein ingestion that affect growth possibilities. Zimbabwe is a country with lower human development indices than Mexico, family incomes are lower and the population is mostly rural and poor. On the other hand, it is also important to take into account

that the sample is not yet sufficient to create a norm and these preliminary values may change.

In general, when analyzing the values obtained by both sexes as a single group, the Zimbabwe sample achieves superior results in 37 of the 48 indicators analyzed. This represents 77.08% with a statistical significance of 0.001 according to the percentage significance ratio.

It is necessary to point out that these tests evaluate only the level of development of physical capacities, therefore they don't possess the capability to determine in what specific sport the person will be successful in the future as to end up becoming an Olympic Champion. These tests offer a range of possibilities that allow differentiating the children with bigger development of the physical capacities of the rest of their partners. Using those results, the trainers must guide the process of sports initiation. If the coach wants to be successful, he needs to keep in mind the influence of the rest of the factors that influence the process of sports formation.

The trainers that work with children should have clear the importance that possesses the athlete's multilateral formation. Their capacities should be developed in such a way that the process does not be accelerated and fall into an early specialization that conspires against their health and limits their sports life. It is necessary to know the characteristics of the age phases, to be able to select and apply the methods and adequately training loads with children (Pérez, 2017).

Using the same tests similar studies have been developed in countries such as Nicaragua (Pindamon-

Table 4. *90 [th] Percentile for the Different Ages in the Physical Tests, Male Samples*

Test	14 years	13 years	12 years	11 years
Speed Zimbabwe (sec)	6,5	6,54	7,5	5,12
Speed Mexico (sec)	7,2	7,4	7,0	5,3
Push-up Zimbabwe (rep)	31	31	32	28
Push-up Mexico (rep)	22	20	19	18
Abdominal Zimbabwe (rep)	42	45	40	42
Abdominal Mexico (rep)	40	37	33	30
Jump Zimbabwe (cm)	200	196	180	173
Jump Mexico (cm)	200	185	172	161
Endurance Zimbabwe (min)	3,13	3,19	3,45	2,05
Endurance Mexico (min)	3,38	3,49	3,41	2,27

Note: Values where Zimbabwe gets a lower result appear in red

Table 5. *97 [th] Percentile for Height at Different Ages and Genders (cm)*

Age	MexicoM	ZimbabweM	MexicoF	ZimbabweF
11	156	155	157	148
12	164,1	155	163	163
13	170,5	170	165	167
14	175	173	167,5	166

Note: Values where Zimbabwe gets a lower result appear in red

hangaba), Brazil (Sao Paulo), Cuba, and the Republic of Mexico, in all cases with remarkable results (Pila, 2003), although with samples of different sizes and characteristics. In all cases with the aim of creating a statistical norm for each country but not to make a comparison as in our study.

In Africa, different investigations have been developed related to the process of talent identification. For example, Jacob (2014) conducted his research to assess assets and modes of talent identification and development in selected sports disciplines in Kenyan universities. Elumaro *et al.,* 2021 (2021) developed research to identify environmental barriers to effective talent development in Nigeria. Munene *et al.,* (2014) proposed a methodology based on motor and anthropometric indicators to select possible sports talents in athletics for the Rift Valley province of the Democratic Republic of Kenya. Botha, J. & Klashorts, E. (2020) explored the sport development initiatives in three previously disadvantaged communities in Tshwane, South Africa. However, none of these studies uses the same tests aimed at detecting children with a high physical predisposition to practice sports. Which are ideal for low-income countries due to their low cost and simple application.

CONCLUSIONS

In the comparison with the Mexican norm, the sample of Zimbabwe achieves outstanding results in the majority of the analyzed indicators. With these preliminary results, we cannot establish that the Zimbabwean population possesses significant physical possibilities for sports practice. However, we can infer that many of the children evaluated so far could be considered possible sports talents if they lived in Mexico. These results show the importance of having a statistical norm with the characteristic of the Zimbabwe population that facilitates the first step in the identification of boys and girls with potential for sports.

BIBLIOGRAPHIC REFERENCES

Botha, J. & Klashorts, E. (2020). Skills development or talent identification? An exploration of sport development initiatives in three previously disadvantaged communities in Tshwane, South Africa. *African Journal for Physical Activity and Health Sciences* (AJPHES), 26(4). https://journals.co.za/doi/abs/10.37597/ajphes.2020.26.4.10

Elumaro, A. Ayenigbara, O. Adegboro, J. Momoh, D. (2021). Exploring Talent Development Environments in Nigeria: A Case Study of Sport Development Framework in Ondo State.*J Adv Sport Phys Edu,4*(10), 212-218. https://doi.org/10.36348/jaspe.2021.v04i10.001

Jacob, A. B. I. S. A. I. (2014).*Assets and modes of identification and development of talented student-athletes in selected sport disciplines in Kenyan universities*[Doctoral dissertation, Kenyan Universities]. Repositorio Kenyatta University. https://irlibrary.ku.ac.ke/bitstream/handle/123456789/11954/Assets%20and%20modes%20of%20identification%20and%20development%20of%20talented%20student%20athletes%20in%20selected%20sport%20disciplines%20in%20Kenyan%20Universities.pdf;sequence=2

Munene, D. M., de la Paz, L. Touset, R. (2014). Selección de posibles talentos en las pruebas de medio fondo en atletismo en Kenia. *EFdeportes*, 19 (193) https://www.efdeportes.com/efd193/talentos-en-medio-fondo-en-atletismo-en-kenia.htm

Pérez, I. (2017). Methodological bases for talents identification in sports. *The International Journal of Humanities & Social Studies*, 5(9). http://www.internationaljournalcorner.com/index.php/theijhss/article/download/125647/86643

Pila, H. (2003). Selección de talentos para el deporte, 27 años de experiencia en Cuba. Metodología de las pruebas. Revista Electrónica *EFdeportes*, 9 (65) https://www.efdeportes.com/efd65/talento.htm

Pila, H. (2004). Selección de talentos para el deporte, 27 años de experiencia en Cuba. Metodología para evaluar las pruebas. *EFdeportes*, Year 10(69) https://www.efdeportes.com/efd69/talento.htm

Zatsiorskij, V. (1989). *Metrología Deportiva*. Editorial Planeta.