26 - IMPACT OF TECHNOLOGIES IN CYCLING: NATIONAL STAGE OF SCHOOL GAMES

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INTRODUCTION

Sport, as well as so many areas, needs information to be able to develop it, so based on physical, mechanical and biochemical concepts, it is possible to reveal better conditions for Physical Education practices, however, equipment is needed that can improve performance and resourcefulness . These are still responsible for transforming an athlete's action into a data that can be analyzed and quantified (SOARES, 2004).

The great challenge is to develop a technology as a fundamental tool to improve the performance of Brazilian cycling, according to Vieira (2015), "the great challenge is to develop a technology as a fundamental tool for improving performance for Brazilian cycling. American and European companies have created several power meters, implying that cyclists have difficulty accessing them because of the high cost of the equipment. " The Power Meters are based on the physical concepts and define how the power being product between the force applied in a towed load and its speed at a certain moment. These characteristics, such as strength, torque, speed, cadence and others, are used to quantify the aerobic power output of the athlete (VIEIRA, 2015).

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Although road cycling is considered a sport of excellence, its athletes need to develop very high powers, which are required repeatedly and usually of short duration (TEXEIRA, 2014).

The present article aims at assessing the use of technologies and their efficiency, correlating with the socioeconomic conditions of youngsters between 15-17 years of both sexes, classified in the cycling mode in the school games of the youth, in order to indicate that the socioeconomic conditions and the technologies used in the training of the group studied contribute to their performance in competitions.

It is necessary to know that equipment for measuring power has a high cost, making it the restrictive method for only high performance athletes belonging to large teams or clubs.

With the development of the equipment it is possible to perform a complete analysis of the athlete, and to raise their real physical and physiological condition. Develop specific trainings and monitor their evolution throughout a predetermined season or period. In other words, comparing and analyzing results and data has gone from a simple statistic and became paramount for high level sports (VIEIRA, 2015).

METHODOLOGY

The present study was carried out with the coaches of young athletes (15-17 years old) of both sexes, participants in the cycling of youth school games, the applied method was a quantitative descriptive research, based on an interview and metadata search, based on the study of public research data, namely IBGE census and other databases.

The data collected in the interview with the technicians during the competition were compared with the classification and results of the athletes in the competition in the tests of counter clock, by points and resistance.

The Olympic Committee divided Brazil for competition in three major regions:

Regional 1 (AL, BA, CE, MA, PB, PE, PI, RN and SE);
Regional 2 (AC, AM, AP, DF, MT, PA, RO, RR E TO);
Regional 3 (ES, GO, MG, MS, PR, RJ, RS, SC and SP).

We took advantage of the same division of the Brazilian Olympic Committee (COB) for the analysis, tabulation of the data collected and followed the rules of the competition.

Bicycles should be standardized by regulation, based on the UCI (International Cycling Union), regulating the same ratchet and chain dimensions essential for leveling test conditions (COB, 2017).

The cycling competition is conducted according to the official rules of the UCI and the Brazilian Cycling Confederation. The unit of the federation may register one (1) technician and two (2) student athletes in each gender, two (2) student-athletes per test. Each student-athlete participated in the 3 (three) tests offered, which were confirmed at the technical meeting (COB, 2017).

Brasília hosted the 2017 youth school games.

The wheels to be used must be traditional, aluminum rims with at least 16 spokes, the height of the rim rim should have a maximum of 2.5 cm. Technological devices such as clip handle, carbon fiber wheels, closed wheels, aero helmets, etc. are not allowed. The wheels to be used must be traditional, aluminum rims with at least 16 spokes, the height of the rim rim should have a maximum of 2.5 cm. Any frame other than this measure must be authorized by the UCI (CBC, 2017).

The diameter of the wheels including the tire must be between 70 cm maximum and 55 cm minimum, according to the UCI regulation. Wheels made of carbon fiber are prohibited. Bicycles shall be equipped with a single ratchet (freewheel). Depending on the need and assembly of the rear wheel, the rear shifter can be maintained and used in the chain tensioner

function. Only one crown shall be used on the front transmission. However, double crowns are allowed, provided the front gear is sealed, not allowing the chain to pass from one crown to the other (CBC, 2017).

Track frames may be used provided that the bicycles are complete with the two brakes, the two knobs, etc.; The minimum weight of 6.8 kg stipulated in international regulations should be maintained (UCI, 2017).

The use of cycling computers will be allowed. The transmission for this category will be limited to 7.93m. There will be control and verification of transmission in all the tests. The tests to be performed are the following: MALE / FEMALE TESTS: Individual counter-clock (CRI) 500 m 500 m; 25 km / up to 10 sprints 15 km / up to 6 sprints Road (in circuit) 50 minutes + 01 laps 35 minutes + 01 turn 9. (COB, 2017)

Road cycling starts by female points.

In the study the standardization of resources and bicycles that fit all participants provides equality, which is also objectified in competition. In addition to increasing reliability of the analyzed data.

For the evaluation and execution of the experimental part a socioeconomic questionnaire is applied to trainers, the sample comprises 27 coaches from all Brazilian States. The coaches signed the Free and Informed Consent Term (TCLE) the participation of the research, where they answered questions of a quick interview and compared their answers to the official results published in the general bulletins of the Brazilian Olympic Committee. The interview script will be as follows:

1. Number of athletes of both sexes who are participating in the games;
2. Time of preparation of the athletes;
3. Technologies used;
4. Uses power meter;
5. Number of sessions per week;
6. Session time;
7. What is the potency of training;
8. Classification of athletes in 2016;

The data tabulation was performed through the Microsoft Office Excel 2010 program, where the data was organized to be analyzed, both data from the experiment interviews and searches in government agencies were stored in Microsoft Office Excel 2010 tabulated where we made the table below.

RESULTS

In the analysis of the data were carried out between the days 15 and 17 of November of the year of 2017 in the places of the competitions, so we were able to construct the table below that subsidizes us with the results to discuss the present study:

Table 1: Regional 3 (ES, GO, MG, MS, PR, RJ, RS, SC E SP)

Regional 03	ES	GO	MS	MG	PR	RJ	RS	SC	SP
N°of Athletes enrolled	16	8	8	8	8	16	8	8	16
Training time (Months)	7	7	7	7	12	7	3	12	3
Technology	4	3	2	3	1	5	3	2	5
Potentiometer (Un)	1	1			1		1	1	1
N° of sessions (Days)	4	2	4	4	4	4	4	4	4
Time per session (h)	120	90	90	120	120	60	60	120	90
Training power (W)			120-220				61-120		
Results 2017									
Proof Counter	1°F			2°M	2°F 6°M	1°M	3°M		3°F 5°M 4°F
Proof for points	1°M				1°F 3°F 4°M 5°M				2°F
Road Testing	6°F		6°F 5°M		1°F 2°F 1°M	4°M		3°M 6°M 5°F	3°F

Source: Author, 2018. Legend: Female (F), Male (M).

Table 2: Regional 2 (AC, AM, AP, DF, MT, PA, RO, RR E TO)

Regional 02	AC	AM	AP	DF	MT	PA	RR	RO	TO
N° of Athletes enrolled	16	16	16	8	8	16	8	8	
Training time (Months)	3	3	12	12	7	7	3	7	
Tecnology	3	3	2	5	3	3	1	1	
Potentiometer (Un)			1			1		1	
N° of sessions (Days)	2	3	3	4	3	3	3	2	
Time per session (h)									
Training power (W)		61-120	121-220						
Results 2017									
Proof Counter									5°F 4°F
Road Testing									4°F

Source: Author, 2018. Legend: Female (F), Male (M).

Tabela 3: Regional 1 (ALBA, CE, MA, PB, PE, PI, RN E SE)

Regional 01	AL	BA	CE	MA	PB	PE	PI	RN	SE

It is necessary to comment that the States of Maranhão and Tocantins did not respond to the questionnaire and the

State of Piauí did not write athletes in cycling due to lack of financial conditions.

DISCUSSIONS

In order to elucidate the role of technologies and socioeconomic factors in the performance of athletes by region we count and compare how many technological means and what the regional economic condition of each of the three regions pre-established by the COB.

However, it does not limit the purchasing power of the technologies, so the richer regions can buy the most modern technologies and get to have the lightest equipment, in addition to the investments in technology to be broader than we understand because the technology is also used in food and nutrition as a tool of innovation and thus we perceive the imposition in the cycling of economic power as we will show tables below through the wealth measured by GDP Gross Domestic Product that is the sum of the riches produced in the regional the largest GDP are in the South and Southeast.

And the Human Development Index (HDI) is an index that seeks to measure the level of development of a country from a broader perspective than the simple relationship between gross domestic product and population. To do so, it incorporates the dimensions longevity and education, combined through a simple arithmetic procedure (GUIMARÃES, 2005).

We can see that the states with the best HDI are located in the South and Southeast regions, while the worst results are in the Northeast and North regions.

The best indices of development and the richest regions are directly proportional to the performance of young athletes (15-17 years) of both sexes, participants in the cycling of the youth school games research proven by two distinct methodological follow-ups, one focused on the metadata research, based on the study of public data searches, namely IBGE census. And the other one of experimental, being an interview with trainers of each state of the federation in the games, we have information of how the economic aspect influences in the school cycling.

Photo of Amanda Kunkel from Paraná pr favoritism and conquering ing Thursday morning, the 16 his first gold medal School Youth Games Brasília 2017, for athletes from 15 to 17 years old.

Other notable aspects are the amount of athletes of both sexes who are participating in the games are practically equal only the State of Piauí for lack of financial conditions did not enroll athletes, the preparation time of the athletes are higher in the south and southeast region more days more material use more resources available more food etc ...

Photo of Carioca Kayllan Luiz Machado won a gold medal in the cou clock test of the Brasília 2017 Youth School Games.

Uses power meter is still not used in the northeast and little in the north and mid-west the most expensive technology is used by more than six states of regional 03, we still had the confirmation because only where you have the equipment is known of the training power range for adolescents;

Number of sessions per week is higher in regional 03 in an average of four sessions while in other regions the average is two or three sessions;

CONCLUSIONS

Notably there is a great discrepancy in Brazilian school cycling where cycling is developed on the initiative of heroes such as those of film where they fight against the villain of the Brazilian regional inequality although one has talent often there are no resources to acquire suitable technologies.

The sports modality that have many equipments in comparison to other sports where only with a ball one can already do a training like the soccer, however in the cycling there is need of several components to begin of the bike of high value and its implementos such as sapatinha, helmet and others have an investment around two to three thousand reais, so a team of eight athletes being male and female has a cost of 24,000.00 thousand reais.

Cycling equipment.

We have noticed that the states that stand out in these states are the ones with the highest wealth and highest human development, as well as cities where culture and pedaling conditions are pre-eminent.

Thus, the number of positive results being medals in the first to third place to which you have access to the athlete scholarship (A cost help for the athlete to continue his training) most of the time is in the South and Southeast region, besides the rankings of 4th the 6th are also from that region, so we conclude that in school cycling the more developed regions with better GDP and HDI, holds the necessary technologies for cycling training, therefore dominate Brazilian cycling.

Proof of road cycling resistance.

It is necessary the intervention of the Cycling Federations, of the States Governments and Municipalities of the North and Northeast for the investment in Cycles, Equipment and technologies for the children of these regions to compete in equal conditions the cycling, and thus to improve the sport in Brazil level. Sport contributes to cultural changes through the method they call "inculturation", which is obtained through the interaction of new individuals with the ways and customs of societies (CARRAVETTA, 1996).

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Abstract

The investment in technology in sports is directly proportional to performance improvement, in cycling it would not be different, its athletes need to develop very high powers, so equipment, to measure power has a high cost, made the method restrictive. This article aims to assess the use of technologies and their efficiency, correlating with the socioeconomic conditions of youngsters between 15-17 years of both sexes, classified in cycling mode in youth school games. The method applied was a descriptive quantitative research, based on interviews and metadata research, based on the study of public data surveys, namely IBGE census and other databases. The Olympic Committee divided Brazil for competition in three major regions and for the data collection it is applied the interview to coaches of all the states, the data were analyzed and compared, therefore we arrived at the following results: The Regions: Southeast and South cycling, the conclusion is that cycling performance is directly linked to equipment investment patterns, such as the potentiometer and the differences between the economic conditions of each region where the south and southeast region has superiority in the school cycling because of the richness seen in GDP and HDI also demonstrated with total medals far superior to the North and Northeast.

Keywords: Cycling; Technologies; Performance.

Résumé

L'investissement dans la technologie dans le sport est directement proportionnel à l'amélioration de la performance. Dans le cyclisme, il ne devrait pas en être autrement, ses athlètes doivent développer de très grandes puissances, donc l'équipement, pour mesurer la puissance a un coût élevé, rend la méthode restrictive. Cet article vise à évaluer l'utilisation des technologies et leur efficacité, en corrélation avec les conditions socio-économiques des jeunes de 15 à 17 ans des deux sexes, classées en mode cycliste dans les jeux scolaires des jeunes. La méthode appliquée était une recherche descriptive quantitative, basée sur des entretiens et des métadonnées, basée sur l'étude d'enquêtes de données publiques, à savoir le recensement IBGE et d'autres bases de données. Le Comité olympique a divisé le Brésil pour la compétition dans trois grandes régions et pour la collecte des données, il a appliqué l'entretien aux entraîneurs de tous les États. Les données ont été analysées et comparées. Nous sommes donc parvenus aux résultats suivants: Les régions: sud-est et sud cyclisme, la conclusion est que la performance cycliste est directement liée aux schémas d'investissement en équipement, tels que le potentiomètre, et aux différences entre les conditions économiques de chaque région où la région sud et sud-est est supérieure au le cyclisme scolaire en raison de la richesse du PIB et de l'IDH démontré également avec des médailles totales bien supérieures au Nord et au Nord-Est.

Mots-clés: cyclisme; Les technologies; La performance.

RESUMEN

La inversión en tecnología en el deporte es directamente proporcional a la mejora de la performance, en el ciclismo no

sería diferente, sus atletas necesitan desarrollar potencias muy elevadas, así que los equipos, para medir la potencia tiene un alto costo, tornado el método restrictivo. El presente artículo apunta a medir el uso de las tecnologías y su eficiencia, correlacionando con las condiciones socioeconómicas de jóvenes entre 15-17 años de ambos sexos, clasificados en la modalidad ciclismo en los juegos escolares de la juventud. El método aplicado fue una investigación cuantitativa descriptiva, basada en entrevistas e investigación de metadatos, basado en el estudio de investigaciones públicas de datos, a saber, el censo del IBGE y otras bases de datos. El Comité Olímpico dividió a efectos de competencia Brasil en tres grandes regiones y para la recolección de datos se aplica la entrevista a entrenadores de todos los estados, los datos fueron analizados y comparados, por lo que llegamos a los siguientes resultados: Las Regiones: sudeste y sur que utilizan el mayor número de tecnologías en el ciclismo, a la conclusión es que la performance en el ciclismo está directamente vinculada a los patrones de inversión en equipos, como ejemplo el potenciómetro y las diferencias entre las condiciones económicas de cada región donde la región sur y sudeste tiene superioridad en ciclismo escolar por razón de las riquezas vistas en el PIB e IDH demostrado también con el total de medallas muy superior al Norte y Nordeste.

Palabras claves: Ciclismo; tecnologías; Rendimiento.

RESUMO

O investimento em tecnologia no esporte é diretamente proporcional a melhoria da performance, no ciclismo não seria diferente, os seus atletas precisam desenvolver potências muito elevadas, assim os equipamentos, para mensurar potência possui um alto custo, tornado o método restritivo. O presente artigo visa aferir o uso das tecnologias e sua eficiência, correlacionando com as condições socioeconômicas de jovens entre 15-17 anos de ambos os sexos, classificados na modalidade ciclismo nos jogos escolares da juventude. O método aplicado foi uma pesquisa quantitativa descritiva, com base em entrevistas e pesquisa de metadados, baseado no estudo de pesquisas públicas de dados, a saber, censo do IBGE e outras bases de dados. O Comitê Olímpico dividiu para efeitos de competição o Brasil em três grandes regiões e para a coleta de dados se aplica a entrevista a treinadores de todos os estados, os dados foram analisados e comparados, portanto chegamos aos seguintes resultados: As Regiões: sudeste e sul usam o maior número de tecnologias no ciclismo, à conclusão é que a performance no ciclismo está diretamente ligados aos padrões de investimento em equipamentos, como exemplo o potenciômetro e as diferenças entre as condições econômicas de cada região onde a região sul e sudeste tem superioridade no ciclismo escolar por razão das riquezas vistas no PIB e IDH demostrado também com o total de medalhas muito superior ao Norte e Nordeste.

Palavras-chaves: Ciclismo; Tecnologias; Performance.