

138 - PERFORMANCE ANALYSIS OF FEMALE JUMPERS IN ATHLETICS

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INTRODUCTION

Many people think that athletics the basis for all sports, because this sport works with the rudimentary movements of humans as jumping, running and throwing. These motor actions formerly were very important to survival of the humans. The Greece is consider the "cradle" of sports activity and was found practice relates of the athletics in there. The first run that has been reported occurred in 1496 a.C., organized by Hercules. He built a stadium which later other sports, as the javelin and discus throw, would be performed (CAMARGO e SILVA, 1978).

The athletics in your modern definition is a sport composed for three competitions types as well as the track, which running, the field, included jumps and throws, and combined competitions. Including theses competitions can be found street, road and uphill running (CBTA, 2003). The athletics practitioner in your training looking for to be citius, altius and fortius (fastest, highest, strongest).

In this work, we analyzed the results by youth category in jump competitions, in other words, in one of the field competitions. Jump competitions are classified in four, as two vertical jumps, high jump and pole vault, and two horizontal jumps, long and triple jumps. Nowadays, in Brazil, the Brazilian Athletics Confederation (CBAt) organized yours competitions in the following categories: Masters (over 35 years old), Adult (over 16 years old), Under-23 (16-22 years old), Kid (16-19 years old) and Youth (15-17 years old). In state level found smaller (13 and 14 years old) and pre-smaller (11 and 12 years old) competitions, organized by athletics federations (CBAt).

Athlete's accomplishment is not achieved with just one variable, accordingly, in the first moment, is necessary to assess the largest subjects possible, it is common applying several tests, known as a battery tests also. These batteries are composed for exercises and methodologies easy and cheap, but that show high coefficients of validity, reliability and objectivity (MATSUDO, 2004).

According Cooper (1992), tests batteries measure the athleticism or motor capacity, obtained for genetic or special training, although some have emerged in order to measure the physical fitness related to health. In United States, the most common tests batteries used are developed by Alliance for Health, Physical Education, Recreation and Dance (AAHPERD). However, there is a several tests batteries as well as International Council for Standardization of Physical Fitness Tests (ICSPFT), of the CAHPERD, International Biological Program (IBP), the EUROFIT, and in Latin America we founded the CELAFISCS, which in old countries of the socialist bloc, is common used the protocol developed by Leipzig. Currently, can be found tests batteries formed with aim recruiting talents, although there are many tests aiming to assess the overall fitness (MATSUDO, 2004).

The results obtained in official competitions, are used for coaches with a referential in definition on futures objectives and talent diagnostics. The CBAt used these results for selecting athletes that representing national teams in international competitions. However, in sports initiation, these results can be used a referential for talent diagnostics. Therefore, the aim of this study was compare and analyze the results obtained for female jumpers, in long, high, triple and vault jumps, in youth category, during the Brazilian Championships between 2000 and 2008.

METHODOLOGY

This study is characterized with retrospective descriptive. The data used were found in CBAt website (<http://www.cbat.org.br>), South American Athletics Confederation (<http://www.consudatle.org>) and International Association Athletics Federation (<http://www.iaaf.org>), relative a jump competitions in youth category, where are included female subjects with 13, 14, 15, 16 and 17 years old. Were separated the top three in all trials. In these websites also can be found the ten best scores in each season and all the records; of the championship, Brazilian championship, South American and World Championships (the championship record is different of the Brazilian record, because this can be obtained during international competition, performed in anyone place of the world).

Youth category at the 2006 was composed for athletes with age between 13–17 years old. However, in 2007, was established that only athletes with 15–17 years old could participate in this category. Therefore, the best results show in each age group with 13–14 years old, represents the data obtained until 2006.

The results were reported in average and standard error, and were submit to variance analysis (ANOVA) with two judgments, following to Tukey test for estimate between performance average values. To decrease performance assess through the years, we used to slope coefficient of the regression analysis.

RESULTS AND DISCUSSION

The first trial to be analyzed was long jump. The athlete's average jumped in last nine years 5.75 ± 0.18 , 5.63 ± 0.14 and 5.49 ± 0.17 meters, for obtained the first, second and third places, respectively. Between 2000 and 2008, the best result for 17 years old category in Brazilian Championship was obtained in 2000, jumping 5.88 meters. In 16 years old category, the best result founded was 5.81 meters, reached in 2004. Subjects with 15 years old the best result reported was 6.07 meters in 2002. The best result reported by athletes with 14 years old was 5.69 meters in 2005. There weren't among top ten scores by athletes with 13 years old. Brazilian's Championship record is 6.07 meters (2002), and the Brazilian record in this category is 6.18 meters (2006), being this score considering with South American record. World record in youth category is 6.91 meters (1981), obtained by Oriental Germany's Athlete Heike Drechsler, in Jena city. In table 1 can be observed, for negative signal obtained through decrease regression analysis by all subjects, the apparent performance reduction among 2000 and 2008. Indeed, due to fluctuation results, the decrease was statistical equal to zero (test t; $p > 0.05$). Therefore, there wasn't found difference in results obtained among 2000 and 2008 for each subject.

Table 1. Subject Performance analysis in long jump among 2000 and 2008, through decrease regression analysis.

Assessment	Place	Decrease	Standard Error	t(7)	p
	1*	-0,0052	0,0244	-0,2120	0,8381
Distance	2*	0,0188	0,0186	1,0150	0,3439
	3*	-0,0032	0,0241	-0,1313	0,8992

Among 2000 and 2008, the nine first place in long jump, just one to catch by athlete with 15 years old, five medals was obtained by athletes with 16 years old, and others three medals was reach by athletes with 17 years old, in the other words, in your last year of the competition. This means that, in this category 55.6% getting the first place in your penult year of the competition, 33.3% reached the first place in your last year of the competition, and just 11.1% purchase the first place in your antepenult year of the competition.

The states that have had success among 2000 and 2008, for the nine first places we founded Rio de Janeiro with 44.4% of the all gold medals, followed by São Paulo and Parana, each of these with 22.2% of the all gold medals. Were distributed 27 medals among 2000 and 2008 being that São Paulo and Rio de Janeiro have 63% of the all them.

The second trial to be analyzed was the high jump. Was verified that average height jumped by the first places among nine years of competition was 1.71 ± 0.05 meters. The second and third places average jumped 1.67 ± 0.04 , 1.65 ± 0.03 meters. The best score founded in age group of the 17 years old among 2000 and 2008 in Brazilian Championship was reached in 2003, where the athlete jumped 1.79 meters. The best score obtained by the athlete with 16 years old in this period was 1.74 meters (2003). In the age group with 15 years old, the best score attained was 1.74 meters (2004). Athletes with 14 years old, purchase the best score that was 1.72 meters (2000). For the athletes in age group of the 13 years old, there weren't results among top ten in this category. In the high jump, the championship record is 1.79 meters (2003). The Brazilian record is 1.85 meters, attained in Mexico, in 2003, being this score consider the South American record. In this trial, the World record is 1.96 meters, reached for athletes Charmine Gale-Weavers from South Africa (1981) and Olga Turchak from Soviet Union (URSS, 1984), getting in Bloemfontein e Donetsk cities respectively. In table 2 can be observed, for negative signal obtained through decrease regression analysis by all subjects, the apparent performance reduction among 2000 and 2008. Indeed, due to fluctuation results, the decrease was statistical equal to zero (test t; $p > 0.05$). Therefore, there wasn't found difference in results obtained among 2000 and 2008 for each subject.

Table 2. Subject Performance analysis in high jump among 2000 and 2008, through decrease regression analysis.

Assessment	Place	Decrease	Standard error	t(7)	P
	1*	-0,0057	0,0060	-0,9411	0,3780
Height	2*	-0,038	0,0056	-0,6807	0,5179
	3*	-0,0028	0,0037	-0,7679	0,4677

During 2000 and 2008, the nine first places in high jumping four medals given to athletes with 17 years old, three by 16 years old athletes and two by athletes with 14 and 15 years old. This means that 44.4%, 33.3%, for all samples getting medals in yours last and penult year of the competition, respectively. Athletes with 14 and 15 years old obtained 11.1% of the all medals distributed.

The states that have had success in this trials, for the nine first places we founded Santa Catarina with 33.3% of the all gold medals, followed by Paraiba state with 33.3% of the all gold medals. In contrast with happening in long jump, high jump did not show dominance by just one state in these results.

The third trial analyzed was the triple jump. We founded among 2000 and 2008 for the first place, the average score was 12.24 ± 0.53 meters. On this same period, the second and third place average score were 11.80 ± 0.30 and 11.55 ± 0.31 meters, respectively. Among 2000 and 2008, the best score for 17, 16, 15 and 14 years old age group was 13.12(2000), 11.93(2005), 12.26(2006), 10.29 (----)meters, respectively. Athletes in age group of the 13 years old, there weren't results among top ten in this trial. The championship record is 12.78 meters (2003). The Brazilian record is 13.23 meters (2000), attained in manaus city, consider South American Record also. World record was obtained in 1997 in Shangai City, by Qiuvan Huang that jumped 14.57 meters. In table 3 can be observed, for negative signal obtained through decrease regression analysis by all subjects, the apparent performance reduction among 2000 and 2008. Indeed, due to fluctuation results, the decrease was statistical equal to zero (test t; $p > 0.05$). Therefore, there wasn't found difference in results obtained among 2000 and 2008 for each subject.

Table 3. Subject Performance analysis in triple jump among 2000 and 2008, through decrease regression analysis.

Assessment	Place	Decrease	Standard Error	t(7)	P
	1*	-0,0440	0,0715	-0,6153	0,5578
Distance	2*	-0,0235	0,0408	-0,5754	0,5831
	3*	0,0617	0,0361	1,7103	0,1310

In triple Jump, we observed predominance by old athletes, of the nine gold medals distributed among 2000 and 2008, five medals was getting by athletes with 17 years old, three by athletes with 16 years old and finally one by athlete with 15 years old, in other words 70.4% of the all medals distributed, given to athletes with 17 years old in this trial. The states that have had success in this trials, for the nine first places we founded Pernambuco and Rio de Janeiro state with 44.4% of the all gold medals. With relationship for all the medals, Rio de Janeiro attained 29.7% of them.

The last trial to be vaulted was pole vault. The average score founded by first, second and third places obtained among 2000 and 2008 were 3.38 ± 0.18 , 3.11 ± 0.14 , 2.97 ± 0.15 meters, respectively. The best score founded in age group of the 17 years old among 2000 and 2008 in Brazilian Championship was reached in 2002, where the athlete jumped 3.60 meters. The best score obtained by the athlete with 16 years old in this period was 3.50 meters (2007). In the age group with 15 years old, the best score attained was 3.40 meters (2006). Athletes with 14 years old, purchase the best score that was 3.31 meters (2004). Finally, the best score founded by athletes with 13 years old was 3.10 meters (2001). In this trial, the championship record in female youth category is 3.60 meters (2002). Brazilian record in female youth category in this trial is 3.81 meters (2002).

The South American record in the same category and trial is 4.30 meters (2005). The world record is 4.40 meters, obtained by Valeriya Volik from Russia (2006); Yingning Zhang from China (2007); and Vicky Parnov from Australia (2007). In table 3 can be observed, for negative signal obtained through decrease regression analysis by all subjects, the apparent performance reduction among 2000 and 2008. Indeed, due to fluctuation results, by first and second places the decrease was statistical equal to zero (test t ; $p > 0.05$). For third place, we founded significance decrease in performance among 2000 and 2008 ($p < 0.05$).

Table 4. Subject Performance analysis in pole vault among 2000 and 2008, through decrease regression analysis.

Assessment	Place	Decrease	Standard Error	t(7)	P
	1*	-0,0070	0,0244	-0,2874	0,7822
Height	2*	-0,0112	0,0192	-0,5803	0,5799
	3**	-0,0457	0,0117	-3,8998	0,0080

* - Statistical significance decrease ($p < 0.05$).

In pole vault, of the nine gold medals distributed among 2000 and 2008, four medals was getting by athletes with 17 years old, three by athletes with 16 years old. In this trial, in 2006 we founded two athletes in second place, therefore, don't have third place in this year, in other words, it explain why there is ten silver medals and eight bronze medals.

The states that have had success in this trials, for the nine gold medals distributed, eight were getting by Rio Grande do Sul and São Paulo. With relationship for all the medals, São Paulo attained 37% of them. We observed just four states to get medals in this national level category, despite the attempt to crowded athletics' and federal government support.

CONCLUSION

In female youth category, all jumping trials, athletes with 17 years old were the most winners, followed by 16 years old athletes. If you consider just gold medals among 2000 and 2008, athletes with 17 years old have two medals more than 16 years old athletes, being for all 36 medals distributed, 16 and 14 medals were by athletes with 17 and 16 years old. Despite, among 2000 and 2008, all the female youth Brazilian championship records were broken. Through decrease analysis, was observed that the performance decrease.

In each trials, can be observed a state's predominance, as reported above. With relationship to the all medals distributed, we can observed a predominance by São Paulo, Rio de Janeiro and Santa Catarina state with 62% of the all medals distributed. Despite to investment increase in athletics, the results are decrease over the years.

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ABSTRACT

This aims this study was to make a comparative analysis between of results to be found for jumpers in long jump, high jump, triple jump and pole vault competitions, in male youth category, of Brazilian Championship between 2000 and 2008. In order to do it, the study was grounded of results disposable in the Brazilian Confederation of Athletics (CBAT), South American Confederation (ConSulAtle) and International Association Athletic Federation (IAAF) websites, concerning the competitions in male jumpers youth category, composed for athletes with 15, 16 and 17 years. After to data analysis, we observed that, of 108 medals (Gold, Silver and Bronze) distributed of 9 years of competitions, the athletes with 17 years old was the most winners, followed by 16 years old. Despite to popularization attempt this type sports throughout Brazil, we observed that few states to stand out in athletics competitions. The results analysis of this category considered a base category, it's not optimistic, because we observed one physical performance reduction of athletes in the last years, showed this country can't have athletes of high level competitive sport in the future.

KEY WORDS: Athletic, base category, youth championship.

L'ANALYSE DE LA PERFORMANCE DES ATHLÈTES DU SAUT FÉMININ

RÉSUMÉ

L'objectif de ce travail a été d'analyser et comparer les résultats obtenus par des sauteuses, dans des compétitions de saut en longueur, triple, en hauteur et à la perche, dans les catégories mineurs, pendant le championnat brésilien de 2000 à 2008. Pourtant, la recherche a été basé avec des données disponibles dans le site de la Confédération Brésilienne d'Athlétisme, de la Confédération Sud-Américaine d'Athlétisme, et dans l'International Association Athletic Federation, par rapport aux compétitions de saut dans la catégorie mineurs, qui est composée par des athlètes de 15, 16 et 17 ans, du sexe féminin. Après l'analyse des données on observe que des 108 médailles (or, argent et bronze) distribuées dans la période de neuf ans, les athlètes de 17 ans sont les plus primées, suivies par les athlètes de 16 ans. Malgré la tentative de massification de cette modalité sportive par tout le Brésil, on observe qui sont peu les états qui réussent se détacher dans l'Athlétisme. L'analyse des résultats présentés par cette catégorie considérée de base, ne sont pas optimistes, car on observe une réduction dans la performance physique des athlètes aux dernières années, démontrant que le pays pourra ne pas posséder des athlètes d'un degré élevé compétitif dans cette modalité pour l'avenir.

MOTS-CLEFS: athlétisme, catégorie de base, championnat de mineurs.

ANÁLISIS DEL RENDIMIENTO DE LAS ATLETAS DEL SALTO FEMININA

RESUMEN

El objetivo de este estudio fue analizar y comparar los resultados obtenidos en las pruebas de salto de longitud, altura, triple y salto con pértiga en las categorías inferiores, durante la competición brasileña de 2000 a 2008. Por lo tanto, la

búsqueda se basó en los datos disponibles en la Confederación Brasileña de Atletismo, en la Confederación Sur América de Atletismo, y International Association Athletic Federation, en las pruebas de salto en la categoría de menores, que consta de atletas con 15, 16 y 17 años de edad. Después de analizar los datos se observa que de 108 medallas (oro, plata y bronce) fueron distribuidos en nueve años, los atletas de 17 años son los más premiados, seguido por los atletas de 16 años. A pesar del intento de masificación este deporte en todo el Brasil, se observa que pocos estados que pueden sobresalir en el atletismo. Los resultados presentados en esta categoría de base, no son optimistas porque hay una reducción en el rendimiento físico de los atletas en los últimos años, demostrando que el país puede no tener atletas de alto nivel en la competición deportiva en el futuro.

PALABRA CLAVES: Atletismo, categoría de base, competición de menores.

ANÁLISE DO DESEMPENHO DE ATLETAS DO SALTO FEMININO

RESUMO

O objetivo deste trabalho foi analisar e comparar os resultados obtidos por saltadoras, nas provas de salto em distância, altura, triplô e com vara, nas categorias menores, durante o campeonato brasileiro de 2000 a 2008. Para tanto, a pesquisa foi fundamentada com dados disponíveis no site da Confederação Brasileira de Atletismo, da Confederação Sul Americana de Atletismo, e no da International Association Athletic Federation, relativos às provas de salto na categoria menores, que é composta por atletas de 15, 16 e 17 anos, do sexo feminino. Após análise dos dados observa-se que das 108 medalhas (ouro, prata e bronze) distribuídas no período de nove anos, as atletas de 17 anos são as mais premiadas, seguida pelas atletas de 16 anos. Apesar da tentativa de massificação desta modalidade desportiva por todo o Brasil, observa-se que são poucos os estados que conseguem se destacar no atletismo. A análise dos resultados apresentados por esta categoria considerada de base, não são otimista, pois observa-se uma redução no desempenho físico das atletas nos últimos anos, demonstrando que o país poderá não possuir atletas de alto nível competitivos nesta modalidade futuramente.

PALAVRAS-CHAVES: Atletismo, categoria de base, campeonato de menores.

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