

**STUDY ON THE INFLUENCE OF SPECIFIC EQUIPMENT IN
ACHIEVING SPORT PERFORMANCE**

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Abstract

Sports performance, whether if we like it or not, is also determined by the quality of the sports equipment used [1], the role of science and technology in sports being a particularly important one these days [2, 3], whether it is students or performance athletes [4].

The present study aims to verify the effect of the presence of sports equipment specific to the game of basketball and possibly its relationship with the achievement of sports performance.

The research took place on a sample of 12 athletes between the ages of 16 and 35, members of the basketball team of the ACS Ralph Brașov Club that plays in the 2nd valuable league of our country (competition season 2021-2022).

As part of a partnership with a major sports equipment manufacturing company, the subjects were offered basketball shoes for testing and eventual purchase at promotional prices.

3 tests were used (98m sprint, 10x5m sprint and 5 consecutive long jumps) with own shoes and special basketball shoes, testing grip, flexibility, stability, ergonomic shape or system depreciation of specific shoes.

The results obtained were surprising, the main conclusion being that sports marketing is not always closely related to sports performance.

Introduction

Starting from the fact that sports performance is also determined by the quality of the sports equipment used, whether it is game objects (ball, tennis paddle, hockey or golf stick, etc) [5, 6, 7] or the equipment itself or its characteristics (skates, rollers, skis, etc.) [8, 9, 10], its influence on the motor learning process [11] or the presence of smart sport equipment [12, 13, 14, 15], we want to discuss the importance of specialized sports shoes, created specifically for the demands of the modern basketball game. In theory, basketball players need footwear that cushions landings and provides stability in playing conditions and adversity. In other words, basketball players need shoes that support and enable top performance. The elements that identify a suitable shoe are: the materials from which it is made, the height of the shoe and the technology of the sole. The upper of a basketball shoe provides support, protection, breathability, and style, and high-quality shoe materials include natural and synthetic leather [16], mesh, hyperfuse construction [17], flywire technology [18], foamposite or flyknit [19]. Basketball shoes heights can be low-cut, offering greater range of motion with the free ankle movement, or mid-cut, featuring an articulated collar that's lower in the back (for mobility) and higher around the ankle (for support) [20]. The midsole of basketball shoes is made of polyurethane foam or phylon, combined with the type of midsole cushioning system, such as Air or Lunarlon, working together to meet the needs of certain players on the court. The cushioning system of the basketball shoes is achieved by Zoom Air technology, which consists of a flat and thin unit that provides adaptive cushioning, ideal for high speeds and quick changes of direction, Max Air, providing maximum protection against impact against force brutal, repetitive and descending basketball game or Lunarlon, which is a basketball-specific cushioning system, provides soft and responsive lightweight cushioning. The Lunarlon cushioning system consists of a Cushlon foam core attached to a lightweight phylon backing that provides an excellent combination of effective cushioning and durable underfoot support [21].

Like all types of footwear, basketball soles are designed to provide durability and traction. In addition to these, some common sole features include: stabilizer (located on the side, this sole extension gives the shoe a wider base of support for stability during lateral movements), solid rubber (commonly used as the outsole material for rings due to its durability), zig-zag rubber for traction (basketball

outsoles must provide multi-directional traction for good grip in all directions), pivot hoops (these areas facilitate rotation when the foot is planted), flex grooves (cuts strategic outsoles enhance natural movement for greater flexibility), hexagonal Zoom Air cushioning (provides many varieties of Air units for impact protection, reactivity and comfort) [21].

From a biomechanical point of view, all these technological efforts are aimed at supporting the ankle joint in order to maximize the effect of the muscular actions assisted by those of the skeletal system related to the athletic demands of the modern basketball game (moving on the court, jumping, etc.).

Material-method

The aim of the paper is to check the possible positive influence of the presence of the equipment specific to the basketball game.

The actuality of the topic implies the existence of a field that assumes a special interest in the development of sports equipment (basketball shoes), which has an important role (at least theoretically) in optimizing sports performance in the game of basketball. Also, the topicality of the theme brings to the fore the concern for improving the training process by choosing the appropriate equipment according to the playing position of the athlete, which can be known both by the athletes and by the coach in the field in order to be able to properly analyze the results of the performance .

The research took place on a sample of 12 athletes between the ages of 16 and 35, members of the basketball team of the ACS Ralph Brașov Club that activates in the 2nd valuable league of our country (competition season 2021-2022).

As part of a partnership with a major sports equipment manufacturing company, the subjects were offered basketball shoes for testing and eventual purchase at promotional prices.

3 tests were used (98m. sprint (T1), 10x5m. sprint (T2) and standing 5 consecutive long jumps (T3)) performed with own shoes and shoes dedicated to the game of basketball, testing the grip, flexibility, stability, ergonomic shape or cushioning system of specific footwear. The tests held with own shoes took place one week before the others, mentioning the best performance obtained from the 2 attempts granted. The 98 m speed run is popularly called the Little Marathon, being the easier version of the well-known Suicide test (USA) [22]. This test is considered to be the speed run between the main lines of the basketball court as follows: baseline – foul line – baseline – center line – foul line – opposite foul line – center line – baseline – foul line – baseline – the opposite baseline; aim for the output time to be less than 24 seconds. In the case of the 10x5m. speed run test, it is necessary for the subjects to cross both lines located at a distance of 5m. with both legs or one leg for

the test to be valid. In the case of T2, the field is marked with adhesive tape at a distance of 5m. from each other. The subject will position himself in front of one of the lanes, in a standing starting position. At the start signal, the subjects will have to run at full speed to the other, stepping past her and then running to the starting line (first lane). The timer starts at the first movement of the performer, the complete speed run cycles will be counted out loud. T3 involves positioning the subject behind the starting line from where the execution starts on his own initiative. Five steps will be taken, alternating the foots, trying to make the flight phase as long as possible, covering as much distance as possible.

Results

As we mentioned before, 3 tests were carried out, with the own shoes and with the special footwear for the basketball game.

The tests were carried out at an interval of 7 days, in the sport hall of the Faculty of Physical Education and Mountain Sports from Transilvania University from Brașov. Each test was performed twice, with the best result recorded.

Subjects performances are shown in the following table, expressed in seconds for the sprint tests or meters for the T3, where PP = personal footwear and BF = basketball footwear.

Table 1 – Tests results

Subjects	T1		T2		T3	
	PS	BF	PS	BF	PS	BF
Subject 1	21.2	21.1	15.3	15.8	13.1	13.1
Subject 2	22.7	22.7	16.5	16	14.6	14.4
Subject 3	23	22.7	16.9	16.4	14.8	14.6
Subject 4	21.1	21	15	14.5	13.1	13.3
Subject 5	21.7	21.5	15.8	15.3	13.5	13.3
Subject 6	21.4	21.1	15.6	15.1	13.2	13
Subject 7	22.8	22.5	16.8	16.3	14.6	14.8
Subject 8	22.4	22.2	16.5	17	14	14.2
Subject 9	22.8	22.7	16.7	16.2	14.7	14.5
Subject 10	21.9	21.6	15.6	15.1	13.8	13.6
Subject 11	21.5	21.6	15.2	15.7	13.5	13.7
Subject 12	22	21.7	16.2	16.7	14.1	14.3
\bar{x}	22.04	21.86	16	15.84	13.91	13.9
σ	0.67	0.66	0.67	0.73	0.64	0.63

V	3.07	3.02	4.19	4.65	4.63	4.58
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From the analysis of the content of Table 1, we find that the performances of the subjects show statistical significance, both the value of the coefficient of variability and that of the standard deviation supporting the presence of the statement, the groups being homogeneous.

Regarding the analysis of the averages of the 3 tests, we can state that in the one concerning T1 the difference is not significant, its value being 0.18 seconds. In the case of T2, with the personal shoes an average result of 16 seconds was obtained, and with the special ones a value of 15.84 seconds, registering a progress of only 0.16 seconds. In T3, a regression of 0.01 m was recorded, reaching a value of 13.9 m. (Diagram 1)

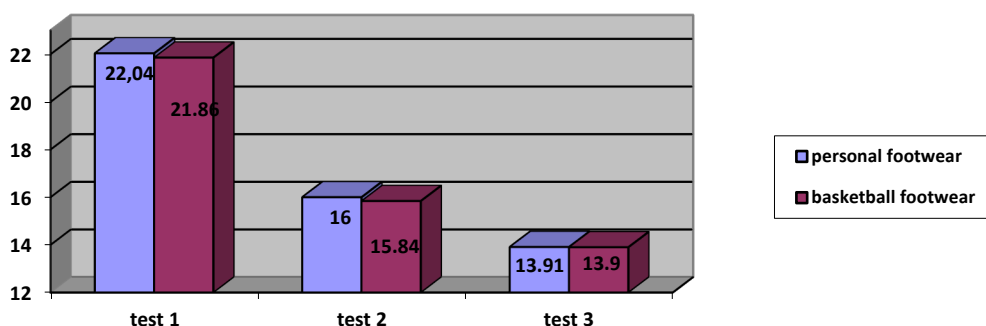


Diagram 1 – Tests average results

Discussions

The sport domain literature has a large series of studies in which the presence of high-quality sports equipment leads to the achievement of sports performance. However, analyzing the performance of the subjects in the proposed tests supported with their own and specific basketball shoes, we definitely state that the hypothesis is not supported, in this case the presence of specific shoes to the game of basketball does not have a significant positive influence on the achievement of sports performance.

The limits of the study fall within the timing procedure of the speed tests (T1 + T2), the measurement being done manually, classically, with the stopwatch. In order to eliminate this aspect, we are currently carrying out a similar study in the

case of football athletes, the measurement being carried out with increased accuracy, being done with the help of modern technological means (sensors).

Conclusions (TNR 12, justify, line spacing 1)

The main conclusion is that, in the present case, the presence of high-quality sports equipment did not positively influence the achievement of sports performance significantly at the level of a group of subjects, sports marketing (product advertising) still being based on this idea.

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