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Effect of Fasting on The Development of Endurance in High-level Basketball Players

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Abstract

The aim of this study was to monitor and verify the effect of fasting on the performance of physical endurance capabilities Basketball players

This study followed a descriptive, quantitative research design, We performed tests Wet and dry (on an empty stomach). ½ Cooper's tests and re-tests to assess the tolerability of the same group that was naturally hydrated and dried (fasted). Comparison of different tests during the three periods of the season.

Results for the Half Cooper are more confirmatory and supportive of the first set of outcomes. During the three, we recorded a statistically significant difference between the two hydration states, with a value of P <0.001.

Conclusion: Through this study, we observed the effect of fasting on certain physical abilities of our basketball players. It has been found that the lack of fluids negatively affects the development of their physical abilities. This leads to implementation of customized hydration strategies.

Keywords: Fasting, Endurance, Basketball .

Introduction

The purpose and importance of the research must be stated at the end of the introduction.

The analysis and evaluation of the achievements of human movement is the basic structure of the various sports sciences, as this helps in the formation and selection of new theories, and helps specialists to choose the correct movements appropriate to the circumstances surrounding the athletic achievement in order to achieve high achievements (Reeser, Jonathan, & Roald B, 2017), Since professionals in different mathematical sciences need solid facts to support their decisions regarding correct technique for motor performance, external conditions have a great influence on motor learning and in achieving high mathematical achievements (Zahálka, František, Tomáš, Lucia, & Miloslav, 2017). Fasting is an external factor that can affect an athlete's motor skills and abilities, To understand the effect of fasting on athletic performance, the effect of exercise and training sessions on an athlete's water condition must be evaluated. According to (Guezennec, 2011), sweating can increase significantly during physical exertion (Cheung, 2015), sometimes up to 4 liters / hour in extreme conditions. Thus, if fluid intake does not compensate for fluid loss, this leads to a decrease in physical and mental performance (Sawka, Noakes, & T, 2007).

Knowing that high-ranking athletes devote a lot of time and effort to perfecting their technical movements, physical conditions and tactical preparation, they must not neglect the nutritional aspect, especially water management and water balance, which directly affect performance. In this context, poor water balance management may lead to failure of the athlete due to poor performance (G, Reguieg, Belkad, & Sbaa B, 2018).

Basketball is one of the most popular team sports in the world. Passing, setting, attacking, blocking, etc. can be mentioned as examples of individual basic skills in game creation. They all use different motor skills and abilities such as mobility and swing or different modes of movement in addition to stamina, agility, flexibility and reaction speed (Lehnert, M. Sigmund, P, & Vařeková, 2017), Due to the significant change in the intensity and frequency of basketball-playing activities, with increasing duration of effort and decreasing rest times, the sessions today should be more urgent, especially in physical participation, because athletes must be able to bear the most difficult and comprehensive workloads from the point of view. . Athletic readiness. This volatile aspect of basketball was confirmed by a change of discipline in 2001, the 24 and 8 second rule, 4 periods of 10-minute play and 5 pauses per team. In team sports, an athlete is known to have limited hydration potential. In this case, the athlete should utilize the downtime to rehydrate while planning how much to eat for each occasion (Maughan & Shirreffs, 2010). This is the case with basketball where he has the opportunity to rehydrate within 5 timeouts per team and thus 10 breaks during the match which can be up to 81 minutes according (Travaillant & Comett, 2003), Dehydration for basketball players is very important according (Broad, M., & L., 1996).

The purpose of this article is to answer the main research question, which is whether fasting has an impact on the stamina development of basketball players.

Material and Method:

Research Protocol:

The ethics committee protocol was approved by the Institute of Physical Education and Sports, and the Physical and Sports Activity Laboratory, University of Constantine 2, on 11/11/2016. A total of five male basket ball players from the Institute of Physical Education

and Sports provided their informed consent to participate in the study as volunteers, with the following characteristics:

Table 1: Characteristics of the sample GSP

Age (years)	Weight (kg)	Height (cm)
22 ± 0,72	89.21 ± 7.60	187 ± 6.46

To ensure an athlete is eligible for the study, we have collected a brief medical history from each athlete. None of them reported previous illnesses and no one had complained of pain at the time of the test.

Our study protocol consists of assessing and comparing the strength and endurance of a basketball player in two different states, in the normal state and during fasting, during three different periods of the season, first in the natural state of hydration with the possibility of deterioration during the test as desired and second in the fasting state, restricting deterioration before 6 Hours of exams and during testing until the end of the session, (fasting day).

Hypotheses: We assume that through physical tests conducted on a group of high-ranking athletes during 3 major stages of the season (preparatory, competitive and passing) indicate that fasting affects the process of developing the stamina of a basketball player.

Data collection:

Protocol. The Half Cooper or the 6 Minute Test: The Half Cooper test was used to calculate the Maximal Aerobic Speed (MAS) of each athlete; it indicates the speed which is witness to the capacity of each athlete to oxygenate his muscles during the effort, it is essential to establish the intensities of the effort of the program. of training. The goal is simple, it is to try to achieve or cover the greatest distance in 6 minutes, after a warm-up of 10 to 15 minutes in slow running followed by 2 fast runs of 40 to 50 meters with return throttled on the distance to cool down, then rest for 2 minutes before starting the test, The value of the MAS corresponds to the distance travelled in meters divided by one hundred (D/100).

Analysis of the data:

In the analysis of the data, the arithmetic mean and standard deviation values for the measurement results of each variable were calculated separately and a table was created. The significance between the measurement values of the groups was tested with the Mann Whitney-U test.

RESULTS:

Comparison between the different tests during the 3 periods of the season. For the processing of the data collected, we calculated the arithmetic mean, the standard deviation, the variance and the coefficient of variation. The arithmetic means the sum of the measured values divided by their number it determines, the average value of a series of calculations, The question may arise if the result of the averages is different. This difference can be due to chance as it can be a significant fact.

Table 2. Endurance results

	hydration condition	**fasting**
Period 1	1551	1430,75

Period 2	1613	1411
Period 3	1644	1408

We scored a difference between the Half Cuper (6 min) test results for two cases during the first period because we recorded an average of1551 meters, where the water was normal And1430,75 is dehydrated. During the second period, we also recorded an average of 1613 meters, where the water is usually and 1511 meters suffer from drought. Moreover, the third period observed an average of 1660 m, as it was naturally wet and 1500 m dried. All differences are very large ($p < 0.001$ ***).

As a result of the endurance measurements, the averages of the hydration and dehydrated groups were evaluated. The change in averages between periods is revealed. It was observed that there was achange in the averages.

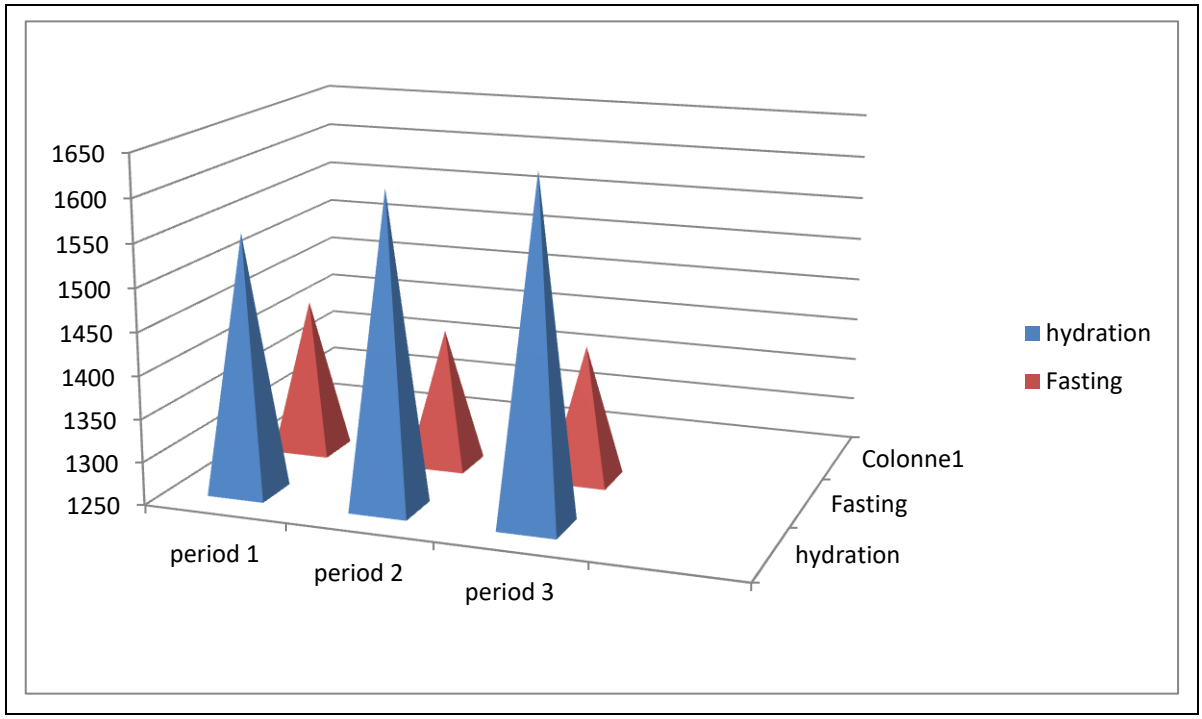

Figure 1. Endurance changes between periods

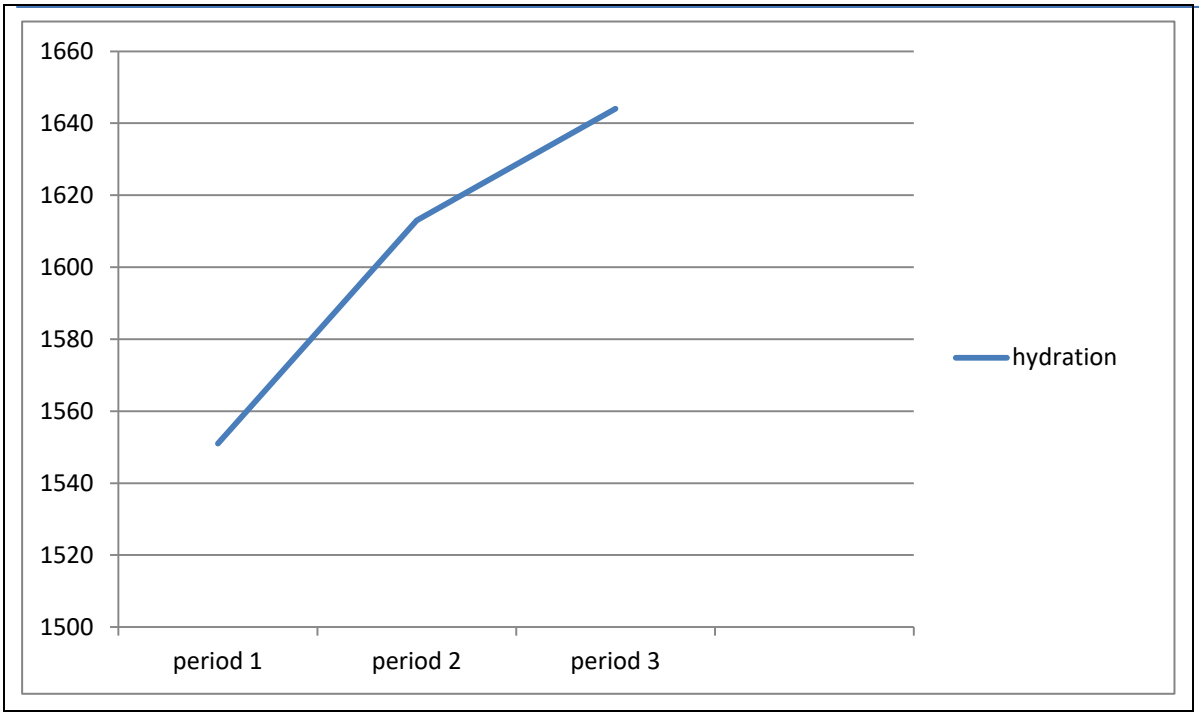

Figure 2. Endurance changes between periods(Hydration)

As a result of the endurance measurements, the average water groups were evaluated. The change in the averages between the periods was detected. A change in the averages was observed. It is a normal condition due to the difference in periods

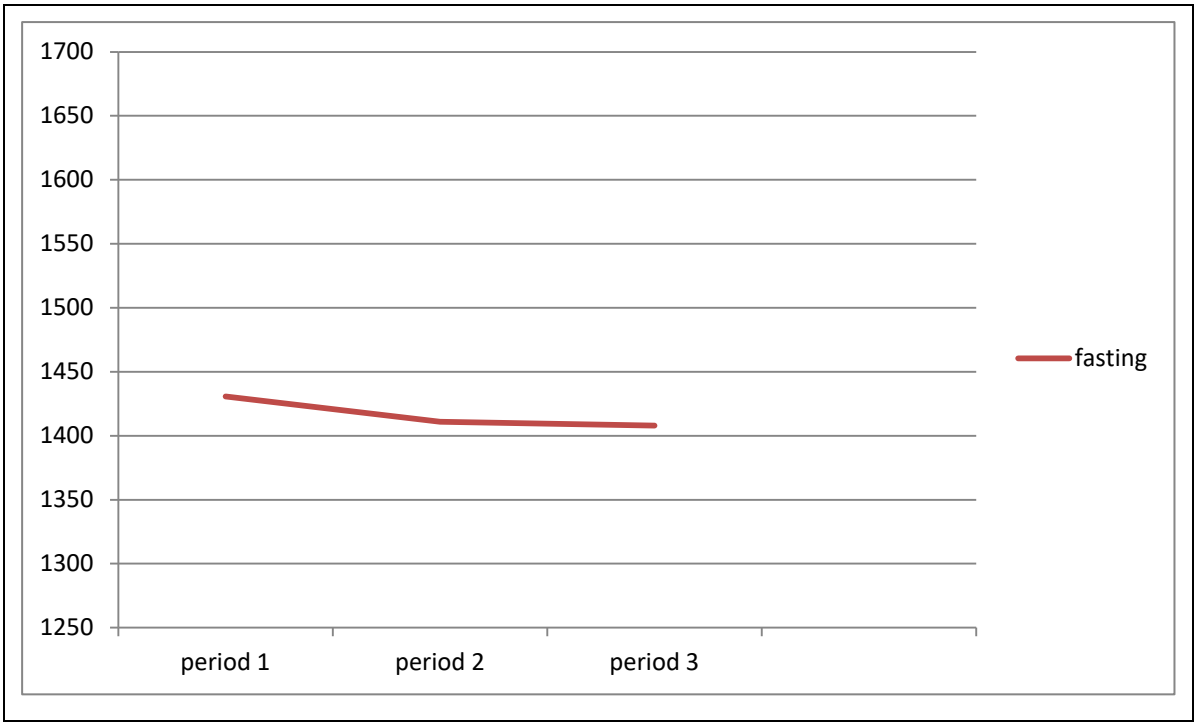

Figure 3. Endurance changes between periods(fasting)

As a result of the endurance measurements, the averages of the fasting groups were evaluated. A change in the averages is observed.A change in the averages between periods, different from the normal state, is detected.

Discussion and conclusion:

The results of the data analysis correlate with the endurance and strength performance of Algerian basketball players, allowing us to make a comparison between the current study and other related work. Thus, the comparison would assess the place given to hydration and its effect on the physical development of basketball.

The majority of authors and researchers report that fasting has a negative effect on physical and intellectual performance, There is no doubt that the exercise of physical exertion during fasting has a certain risk, because when fasting, a lack of energy and fluids arises in the body, which leads to dehydration, and the body enters into stress that may lead to the collapse and damage of the body cells that are built through sport. In this context, , (Hawley & T. D, 1994))) indicates that after 2% of water loss from body mass, our bodies are only functioning at 80% of their capacity. Data from the literature generally shows that fluid deficiency greater than or equal to 2% is detrimental to performance; However, current recommendations are to drink an adequate amount of fluids to reduce dehydration by 2% (Sawka M. N., 2007), (Shirreffs. M, 2011). During fasting for 8-10 hours, the amount of glucogen in the liver decreases and the amount in the muscle decreases by about 50%, without any relationship to physical activity. This decrease in the amount of glucogen causes the amino acids to be converted to sugar.So during our study we were interested in observing the effect of fasting on the various abilities that are very important to the basketball player, which has been an essential feature of the game since we analyzed the game. We found that during a basketball game, the average number of jumps is close to 100, which is a large number and requires proper mathematical preparation. . It is believed that a basketball player is a far cry from having all of his physical, muscular and nervous capabilities when he is suffering from a lack of fluids.

Fasting from water does not allow it to work the same way it does in normal humidity. According to our study, recent research widely agrees with a decrease in performance starting with 2% of fluid loss during fasting. Hence, this confirms our hypothesis but contradicts previous studies, For the Half Cooper test, where we wanted to see the effect of fluid deficiency on basketball players' endurance, the results showed us a very big difference over the three periods and this confirms our hypothesis. However, Professor Goel of the University of Sherbrooke (Canada) believes that low fluid deficiency does not affect endurance

According to (Goulet, 2013), the effect of fluid deficiency on endurance performance is presented by distinguishing two types of protocols: a) A protocol that approaches real racing conditions such as "against the clock";

Keep away from normal competition conditions while maintaining accurate density for as long as possible, In both protocols, endurance performance was compared in subjects who were properly hydrated and who were deficient in fluid due to exertion. The results of this analysis show that under the conditions, post-exercise fluid deficiency improves endurance performance but not significantly (+ 0.09%, P = 0.9) while in the case of the far-from-reality protocol, fluid deficiency reduces performance significantly (1.91% P / 0.05) (Goulet, 2013) .

Our results are somewhat consistent with some of Goulet's (2013) studies. In other words, the main finding of our study reveals that fasting influences to some extent the development of endurance, as confirmed by the results of Juliet's Second Protocol (2013).

Therefore, some things must be taken into consideration and precautions.

Water is one of the essentials for a successful athlete. To reach the top with high results, managing and improving one's water potential must be a source of great concern and concern for all players in the world of sport, namely: athletes, coaches, doctors, physical trainers ... etc. .

Through this study, we observed the effect of fasting on certain physical capacities of basketball players, a somewhat negative effect. It has been found that fasting, to some extent, affects the development of physical abilities of an athlete, as has sometimes been reported by research. Knowing that the results of the tests carried out during our study do not all agree with the data provided by the scientific literature.

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