RESUMO
Um ótimo estado de hidratação é essencial para manter um bom desenvolvimento e desempenho atlético em diversos tipos de esportes, principalmente para atletas que realizam exercícios intensos e prolongados em ambientes quentes. O objetivo foi analisar a partir dos estudos produzidos a essencialidade da hidratação para a prática e desempenho no exercício físico, bem como se os praticantes estão se hidratando corretamente. Trata-se de uma revisão integrativa de literatura realizada na base de dados Science Direct, MEDLINE, BASE e SCIELO, utilizando como descritores hidratação and exercício físico. Foram inclusos artigos publicados em periódicos no período de 2013 a 2018, artigos completos captados gratuitamente; textos disponíveis no idioma Português e Inglês, e excluídos dissertações, teses, monografias bem como artigos científicos repetidos. A busca resultou em 337 artigos, e após os critérios de exclusão restaram 15 artigos. De acordo com a literatura pesquisada, na prática de um exercício físico a água repõe de forma eficiente os conteúdos hídricos, sendo importante para a manutenção da performance e, essencialmente, para garantir um funcionamento adequado do sistema cardiovascular, uma vez que a desidratação causa prejuízos no desempenho esportivo, pois a homeostase hídrica após o exercício afeta a taxa metabólica de repouso e variabilidade da frequência cardíaca. Dessa forma, os estudos mostraram as vantagens de manter uma boa hidratação para prevenir problemas na execução do exercício físico, bem como garantir um bom desempenho físico na prática esportiva.


ABSTRACT
A great state of hydration is essential to keep good development and athletic performance in a variety of sports, especially for athletes who perform intense and prolonged physical exercises in hot environments. The objective was to analyze from the studies produced the essentiality of hydration for practice and performance in physical exercise, as well as whether practitioners are hydrating properly. It is an integrative review of literature conducted in the database Science Direct, MEDLINE, BASE and SCIELO, using as descriptors hydration AND physical exercise. Articles published in periodicals were included in the period from 2013 to 2018, complete articles collected freely of charge; texts available in Portuguese and English, and excluded dissertations, theses, monographs as well as repeated scientific articles. The search resulted in 337 articles, and after the exclusion criteria there were 15 articles. According to the researched literature, in the practice of a physical exercise, water efficiently restores water contents, being important for maintaining performance and, essentially, to guarantee an adequate functioning of the cardiovascular system, since dehydration causes damages in sports performance, since hydric homeostasis after exercise affects the resting metabolic rate and heart rate variability. Thus, studies have shown the advantages of maintaining good hydration to prevent problems in performing physical exercise, as well as ensuring a good physical performance in sports practice.

Key words: Physical exercise, Performance, Hydration.

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INTRODUCTION

Individuals, with the passing of the years, are caring more much of their health and body, adhering to the practice of physical activity and also following a healthy diet, thus aiding in the results, which causes a change in the life habits of a large part of the people.¹

The body performs many physiological adjustments to keep every need of metabolism, with the initiation of any type of sports practice.² It may be mentioned as an example the increase in the rate of sweating.³

The heart rate, blood pressure, double product, maximum oxygen consumption (VO2max), energy expenditure, among others, are physiological responses that occur during the exercise and are widely studied, especially in the control of intensity in the exercise, be aerobic or strength.⁴,⁵,⁶

What can provide a dehydration along trainings and/or competitions are the exhaustive physical practice held in hot conditions and/or wet, coupled with the effects of a high production of metabolic heat and its low dispersion.⁷,⁸

The cognitive-motor performance can be affected negatively by improper intake of fluids, along the physical exercise, providing damage in motor coordination and reaction time. For athletes who do strong and time-consuming activities in heat, we have as an example the road cycling, these aspects are essential for a good performance.⁹-¹⁰

The performance and health of the athlete become compromised when the execution of physical exercise is done in inadequate conditions of temperature and moisture, as well as an unfavorable ingestion of nutrients.¹¹ Thus, the balance of fluids and electrolytes is a relevant condition in the conservation of water-mineral homeostasis in physical practice.¹²

The dehydration generates risks to health, highlighting the stress of exercise, raising the temperature of the body, impairing the physiological responses, as well as physical performance.¹³

It is important to determine methods of liquid replacement, before, during and after the exercise, for the safety of the health of individuals, providing the balance of thermoregulation and physical performance, preventing fatigue before the predicted time, decreasing the risks of problems related to the heat.¹⁴

However, the excess of hydration is also harmful to performance, because it generates gastric discomfort, which may cause a state of hyponatremia (dilution of plasma sodium) in the athlete.¹⁵

Therefore, a review of the literature on sports performance and hydration, has its relevance, because it will show whether the subjects are hydrating themselves correctly and also the importance addition to sporting performance, as well as to show that it is necessary the aid of professionals trained to follow the exercises and hydration.

The research objective was to analyze the effect of the studies produced the essentiality of hydration for practice and performance in physical exercise, as well as practitioners are moisturizing correctly.

MÉTODOS

The methodology used to conduct this study was based on an integrative review of the literature. For this research there was used in the databases online: Science Direct, MEDLINE - Medical Literature Analysis and Retrieval System Online, BASE - Bielefeld Academic Search Engine and SCIELO - Scientific Electronic Library Online. The consultation was conducted in February 2018. In the search strategy there were used the descriptors hydration and physical exercise in which appeared 337 documents, filters were used in relation to the documents available, between the years of 2013 to 2017 and the language (English and Portuguese), obtaining 96 documents. There was performed the reading of the titles and abstracts, and if not enlightening, there was performed the search and reading of the article, to avoid that important studies were not used in the review. There were established some exclusion criteria in this first step, such as the fact that the article be revised, be not appropriate to the theme and be repeated. So, at this stage, 50 abstracts were selected. Of these, 10 were excluded, because it was not accessible; then, there was performed in its entirety of the 40 remaining items. Of these, 25 articles were excluded, because it did not suit the purpose of the study. In the end, 15 articles were selected.

RESULTAS

In table 1, there are the objectives, results and main conclusions most relevant to each one of the eight articles, as well as the authors’ names, and databases.

DISCUSSÃO

The practice of physical exercises requires attention on aspects relating to the condition of hydration of the practitioner. The intake of beverages before, during and after the activity is of great relevance to ensure an adequate degree of hydration. It is essential that the practitioner is hydrated before beginning the activity, because this strategy is fundamental to prevent already begin the exercise with a shortage of water which can be worsened with its implementation. It was also seen that for each type of sport there is a type of beverage, providing better results for the performance.

The study of Gomes et al.¹⁶ demonstrated that the sports drinks are a means to refit the liquids with more effectiveness to grant a better condition of hydration to athletes from cycling investigated.

In this way, Gomes et al.¹⁶ noted that cyclists from Aracaju when judged by the color of the urine and Δ% of body mass were dehydrated before starting the exercises. To preserve a Δ% of body mass index lower than 2%, the athletes showed that the ingestion of water and sports drinks was satisfactory, after divergent means of hydration. However, when cyclists consumed beverages, a favorable condition of hydration was achieved. Therefore, in order to reduce a probable decline in performance, related to dehydration in these cyclists, in addition to the ways of hydration before, during and after training sessions and/or competitions, it is recommended a quick educational method with the athletes, about the tactics of refitting of liquids.
<table>
<thead>
<tr>
<th>Autores/ Bases de dados</th>
<th>Objetivos</th>
<th>Resultados</th>
<th>Principal conclusão</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gomes et al.</td>
<td>Check the condition of hydration of cyclists after training sessions with different forms of hydration in the city of Aracaju.</td>
<td>The state of hydration was verified by urine color and percentage of body mass loss. Based on the color of the urine, GC, GA and GS showed no significant difference in the rate of hydration State, nor in the morning (4.71 ± 0.47; 5.75; 5.0 ± 0.09; P = 0.143; respectively) nor in the moments before and after in each TC (P = 0.786). However, in relation to the percentage of body mass loss between the groups, the GS Group had a smaller loss (-1.20 ± 0.18%) with significant difference of GC (-2.22 ± 0.13%; P = 0.001) and GA (-1.81 ± 0.13%; P = 0.047).</td>
<td>In this way, it can be concluded that the water was not able to promote an adequate hydration, but the sports drink seems to offer a better hydration.</td>
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<td>Mendes et al.</td>
<td>Check the knowledge and habits of hydration between the athletes adolescents of a handball team in the city of São Paulo.</td>
<td>Athletes, in most, already had some practice of handball and 87.5% of them always hydrate during practice, and no athlete reported almost never or never hydrate. Most use moderately cold water for hydration before, during and after training, regardless of the feeling of thirst and the season. The orientation of liquid consumption is mainly of parents.</td>
<td>It is concluded that over half of the handball athletes possess knowledge about the importance of hydration for income. However, there are still athletes who need guidance on the theme, for the adoption of a good strategy of hydration.</td>
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<td>Bublitz e Pol</td>
<td>Evaluate and compare strategies for hydration in American football players.</td>
<td>Assessed 22 athletes who showed a weight loss equal to 0.12 ± 0.52% in F1, 0.65 ± 0.48% on F2 and 0.27 ± 0.69% in F3. The urinary density revealed dehydration after training interventions with water and coconut water. The variability of temperature and humidity in the study may reflect in the hydration strategies.</td>
<td>The American football players lost less than 1% of body weight, remaining in a state of i-hydration, despite the urinary density reveal dehydration in two phases after your workout. The hydration strategies should take into account environmental factors and individual characteristics of the athlete.</td>
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<td>Miyasato et al.</td>
<td>Check for the presence of symptoms related to dehydration in practitioners of different types of aerobic classes at a nearby fitness center of São Paulo, between August and September 2014.</td>
<td>The results showed that there may be inadequate fluid consumption, due to symptoms, even to take.</td>
<td>Thus, it is necessary to raise them to the importance of an adequate hydration in the practice physical activity, being the professional nutritionist at the most appropriate for this purpose.</td>
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<td>Pereira et al.</td>
<td>Anayze the water deficit post-training in judoka submitted to three different training intensities (below 70%, between 70% and 85% and above 85% of maximum heart rate - FCMx) in two States: with and without hydration during training.</td>
<td>The athletes presented a BMI of 24.9 (+ 2.64) kg/m², a fat percentage of 14.5% (+ 6.92) and a FCMx of 198.2 (+3.29) BPM. The average values of DH post workout, without rehydration, were: 1.1 L/h; 1.2 and 1.6 L/h, in mild, moderate and high intensities, respectively. Already the average values of DH with rehydration proposal were: 0.4 L/h; 0.3 and 0.4 L/h, also in their intensities. There was no significant difference in the comparison of the DH in the two situations (p &lt; 0.05).</td>
<td>In conclusion, the rehydration protocol used proved its effectiveness, once the athletes had a post-training water loss less than 3%.</td>
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<td>Cardoso et al.</td>
<td>Assess changes in hydration levels of athletes runners marathon runners after the practice of Athletics.</td>
<td>The results indicate that the race without hydration to occur in middle from dehydration causes 2.14% of the body mass, 56.9 ± 4.7 to 57.5 ± 4.5, without differences BW vs F2. The intake of beer did not affect adversely any measured parameter. Fluid balance and urine excretion values did not differ between rehydration strategies.</td>
<td>The practice of athletics with a distance of 20 kilometers leads to dehydration of 2.14% of body mass, which compromises the performance of the running.</td>
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<td>Jiménez-Pavón et al.</td>
<td>Examine whether a moderate intake of beer as part of rehydration has some negative effect protocol after a short, but dehydrating the exercise in the heat.</td>
<td>Body mass (BM) decreased (both ~ 2.4%) after exercise in both tests. After hydration, BM and fat free mass increased significantly, although the WB has not returned to initial levels (BM, 72.6 ± 6.7 to 69. ± 73.6, fat free mass, 56.9 ± 4.7 to 57.5 ± 4.5, without differences BW vs F2). The intake of beer did not affect adversely any measured parameter. Fluid balance and urine excretion values did not differ between rehydration strategies.</td>
<td>After the exercise and subsequent loss of water, a moderate intake of beer (regular) has not deleterious effects on markers of hydration in active individuals.</td>
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<td>McDermott et al.</td>
<td>Compare the common modes of rehydration (REHY) on cardiovascular regulation and fluid recovery after exercise dehydration (EXDE).</td>
<td>The EXDE resulted in body mass loss of 4.32 ± 0.22%. The REHY returned the subject to 2.13 ± 0.47% of body weight for controlled trials. p = 0.015). The PA systolic seated and MAP during REHY showed that IV + OR was greater than OR, time-independent (p ≤ 0.011). Standing, IV + OR demonstrated a PA greater than NF (p = 0.012) and OR (p = 0.031). The FC was reduced by IV and IV + OR greater extent than NF in REHY30 and REHY60 (p &lt; 0.05). The IV + OR [AVP] showed a strong tendency to decrease over time (p = 0.054) and was significantly lower than NC in REHY60 (p = 0.003).</td>
<td>Practical application that seeks to restore cardiovascular function after EXDE, the combined use of IV + OR instead of a single method REHY seems to be more convenient.</td>
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<td>Author(s)</td>
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<tr>
<td>Castro-Sepúlveda et al.</td>
<td>Compare the effects of dehydration and rehydration after exercise on heart rate variability and resting metabolic rate in college athletes.</td>
<td>Assess the level of knowledge and the degree of hydration of junior football players.</td>
<td>Assess the impact of water replacement with coconut water on hydration status and cardiovascular drift during exercise.</td>
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Therefore, it is necessary to consider the advantages and disadvantages to be able to choose between the hydration made with water and/or carbohydrate solution and with this, establish the most recommended on occasion. Based on the results obtained by Mendes et al., some athletes need guidance on hydration, to join a good strategy. However, more than half of the adolescents of handball athletes has the knowledge about the relevance of the topic for the sports use.

With this, to decrease the symptoms associated with dehydration, achieving the benefits of correct habits, are fundamental actions, such as guidance on hydration and ingestion of sports drinks. It is noteworthy that are specific to each athlete in accordance with the hours of training and their needs, the recommendations of quantities of water and/or sports drinks.

According to Bublitz and Poll, the different states of the climate in the days of data collection may influence the final results of the study. The tactics of hydration during sport must be individual, associated with the particularities of the athlete, the characteristic of the exercise and the climatic conditions. Thus, in this study, the athletes of American football are hydrated as the weight loss of less than 1%, but, the density of the urine showed dehydration post-training in regimens with water and coconut water.

In this study, we observed a significant loss of weight equal to 1.01% and low water consumption, related to environmental conditions on the day of the study; thus, 23 athletes from American football from Curitiba lost liquids at ambient temperature of 13°C and relative humidity of the air to 71%.

The authors Miyasato et al. concluded that because of the symptoms manifested, even being light, perhaps there is inadequate water intake of women. Through a constant assistance and quick, with the professional nutritionist that is best suited to reinforce the recommendations on ways of hydration, drinks to be ingested and symptoms of dehydration. Therefore, it is necessary to guide the practitioners of physical activity and raise them about the importance of a proper hydration during exercise.

For the values of water deficit found in exercises using the rehydration protocol that we proposed with rehydration of 150 ml of water in light exercise; 200 ml in moderate exercise and 300 ml in intense exercise every 15 minutes were lower than the values of water deficit post-exercises found in mild, moderate and strong in practice without hydration. The athletes continued in a condition I-hydrated, confirming the adequacy of this protocol, being the loss of liquid after exercise less than 1%.

The results of Cardoso et al. demonstrated that the performance in 12.5% of the total time of running was affected by the dehydration of 2.14% of body mass. The decline of the performance is caused when the individual dehydrates in 2% of his body weight without refilling the water loss. This study has shown that in the first phase the athletes have lost approximately 1% of body weight and 2.14% in the second phase, which was enough to influence the performance of running, comparing with the first phase.

Thus, the combination of fluids IV (intravenous) and OR (oral) provides some benefits such as decreased limited blood pressure, restoration of cardiac frequency faster, more quick

restoration of plasma [AVP], providing a single method of rehydration (REHY). Interestingly, we found that the subjects along the ad libitum properly replaced the fluids up to -2% loss of body mass.

According to Jiménez-Pavón et al. found that any parameter measured was not negatively affected by the consumption of beer. The water balance and urine excretion values were not different between the tactics of rehydration. A moderate consumption of beer (regular) does not have harmful results on markers of hydration in active individuals, after exercise and subsequent loss of water.

According to Castro-Sepúlveda et al. noticed that the change in metabolic rate at rest was significantly lower in the group of rehydration in comparison with the group of dehydration. It needs to control the condition of hydration before metabolic rate and the assessment of the variation in heart rate at rest, because the homeostasis of fluids after physical practice affects the metabolic rate and heart rate variability at rest.

For Lustosa et al. to check the weight pre and post-training, with the determination of the percentage of Relative Dehydration (DR%) of the players evaluated was one of the procedures used to assess the degree of dehydration, those in large part were characterized as I-hydrated. With respect to the custom to hydrate during the trainings and competitions, it was noticed that most of the evaluated always hydrates. With respect to the custom to hydrate during the trainings and competitions, it was noticed that most of the evaluated always moisturizes. In respect of the level of perception about hydration was possible to percept that players had a median understanding.

The research of Chagas et al. concluded that with effect similar to pure water, coconut water has benefited in the hydration, as well as saved the cardiovascular drift, in conditions of acute dehydration, showing favorable decrease in heart rate. Regardless of water used coconut water or pure water. Based in the cardiac frequency is advisable to a proper hydration among practitioners of exercises. This method can prevent losses in the prescription of physical practice.

The authors Gonçalves; Aquino and Puggina concluded that physical exercise has led to significant changes in the condition of hydration of the corridors and the purpose of the glomerular membrane, changing, in this way, the function of the kidneys of marathoners in the post test. For Faria et al. realized that does not provide a result on psycho-physiological examined variables of the population investigated, the thermal states, the different dietary patterns pre-exercise and hydration throughout its implementation.

According to Camerino et al. between the groups of research, had no important difference in urinary coloration. In these circumstances were not observed significant differences between the groups in blood parameters, time to exhaustion and cognitive-motor tests. It is suggested that a dehydration with loss of up to ~3% of body mass does not cause damage to the physical performance and cognitive-motor.

In the research of Junior, Abreu e Silva saw that it must make recommendations to practitioners of bodybuilding about the consumption of liquids to avoid its inordinate use, since in most of the evaluated, the water intake along the exercise was exaggerated, causing hyperhydration. It is
noteworthy that, in order to adjust the food habits and guide about the importance of proper water intake, it is fundamental to the existence of the nutritionist in the gyms.

CONCLUSION

From the findings, it can be inferred that water is not always the best water resource to be used by the practitioner, since climatic conditions influence the state of hydration, being important to analyze which liquid is best suited to that practice, but is vital that the athletes hydrate the correct way. The review revealed that the majority of the participants of the studies are moisturizing and are aware of the relevance of this habit, for the good sport results. Finally, it is worth mentioning that hyperhydration causes problems, such as gastric discomfort, reinforcing the need for adequate intake of fluids and not exaggerations, emphasizing the need for the aid of professionals trained for this prescription, as is the case with the nutritionist.

REFERENCES


