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Testing the effectiveness of different hydration strategies during exercise sessions among physical education university students, Zambezi Region Katima Mulilo.

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Abstract

Individualised hydration plans play a significant function in improving the performance and protection of athletes prior, during and after physical activity or any other sporting events. The main aim of this study was to test the effectiveness of different hydration strategies during exercise sessions among physical education university students, Zambezi Region Katima Mulilo. This research paper utilised quantitative approach in its design to collect and analyse gathered data. The sample consisted of n = 100 participants (physical education university students in Katima Mulilo of the Zambezi Region) who were purposively selected on the basis of their active involved with PE. Data was collected using questionnaires and analysed using SPSS software to find frequencies and percentage, which was later presented in graphs. The findings and results of this study revealed hydration strategies utilised before the commencement of the physical activity, to which 31% of PE male participants hydrated by drinking 2-10 ounces (200-300ml) of water 2-4 hour prior to the activity commencement, whilst 69% of male participants did not hydrate at all. Whereas, on the other hand, only 9% of female participants drunk 4-8 ounces of water (120-240ml) every 15-20 minutes, and 41% of female participants did not drink or hydrate during the physical activity. Moreover, the results and findings show hydration tactics used while exercising, to which 15% of male participants drunk 4-8 ounces (120-240ml) every 15-20 minutes, whilst 35% of male participants opted to engaged in the physical activities without hydrating at all. Whereas, on the other hand, only 9% of female participants drunk 4-8 ounces of water (120-240ml) every 15-20 minutes, and 41% of female participants did not drink or hydrate during the physical activity. Lastly the results and findings show hydration strategy applied after exercising, of which 94% of male participants drunk 16-24 ounces (450-700ml) of water after they have completed the physical activity, only 6% of male participants did not hydrate. On the other hand, 83% of female participants

hydrated between 16-24 ounces (450-700ml) of water after they finished engaging in a physical activity, 17% of female opted not to hydrate after.

Keywords: Testing, effectiveness, hydration strategies, exercise session, university students.

Introduction

Sports researchers have acknowledge that numerous most important sporting proceedings take place in the in hot or summer season of the year (for instance FIFA World Cup, World Track and Field Championships, and the Summer Olympic Games), where participants compete in scorching warm environments, frequently surpassing 30 °C (Gerrett et al, 2019). Exercising in hot warm and wet humid environmental situations can establish further challenges to physical function, which can harm aerobic workout ability. Research have proved that heat stress can decrease exercise performance in a selection of sports, through numerous systems involving raised core warmth, assessing of observed exertion, heart speed, and sweat rate. In addition, dehydration of bigger than 3% of body mass extra speed up the rise in body temperature and raises the danger of exertional heat disease (heart stroke, heart exhaustion and heat cramps). To prevent the too much loss of body fluids and stop hampered exercise performance, participants need an efficient hydration strategy pre-hydration, mid-hydration, and post-hydration exercise (Pałka et al, 2024).

Studies proposed that during or through prolonged endurance physical exercise at higher ambient temperatures, insufficient source of nutrients, including watery fluids, is very significant. Inadequate quantities of nutrients can trigger several harmful changes, involving decreased exercise function due to lowered plasma and circulating blood level (Périard et al, 2021). Acceptable hydration while exercise influences to the preservation of high-level physical function and mental purpose and help body thermoregulation. Individuals who get involved in sustained physical activity enhance the emission of watery fluids and electrolytes through sweating, which can change heart and muscle functions (Belval et al, 2019). Dependent on the kinds of activity, weather settings, gender, or individual instances, the rate of sweat during physical exercise differs between 0.3 and 2.4 L/h. To neutralise the undesirable impacts of dehydration, watery fluids should be replaced during exercise in such a circumstances that not more than 2% of bodily mass is lost. This degree of dehydration ends in a 10–20% drop in maximum aerobic volume (Deshayes et al, 2022).

Moreover, studies have discovered that the physical exercise commenced at advanced ambient temperatures establishes a precise work. It induces increase in intensity of water loss with secretion, which can lead to hypovolaemia and, subsequently, a much excessive cardiovascular burden, improved glycogen intake, and central nervous system disfunction (Sansone et al, 2022). Constant work under such environments leads to water and electrolyte instabilities, as well as warm air balance and intracorporeal homeostasis disturbance; these exacerbate the physical and chemical changes related with the physical work assumed (McDermott et al, 2017). Guaranteeing and continuing an best condition of hydration for the duration of physical activity becomes gradually difficult subject on the mode of sport, the type of the activity, and the availability of the liquids. However, best hydration is impacted by several circumstances, it can commonly be labelled as avoiding the loss of over 2–3% of body mass during training, whereas evading unnecessary watery fluid consumption (Goodman et al, 2019). The investigation of the performance of physical work in the heat exposed that the optimum performance during lengthy work was attained by a fluid consumption evenly to the level lost in sweat (Truong et al, 2018).

A helpful drinking or hydration strategy is vital for improving performance during exercise sessions. It is fundamental to take into consideration the athlete's hydration condition prior to exercise as well as her or his watery fluid, electrolyte, and substratum needs prior, while, and after a exercise session (Nuccio et al, 2017). This approach must be adapted to the specific and take into

consideration environmental circumstances, competition guidelines, and other components. consequently, it appears meaningful to examine the influences of distinctive hydration strategies during prolonged physical effort at higher ambient temperatures on work force and chosen physical indicators in youthful males. The aim of this study was to test the effectiveness of different hydration strategies during exercise sessions among physical education university students, Zambezi Region Katima Mulilo.

Statement problem

In spite of extensive compromise on the status of keeping an appropriate hydration for best physical function, performance results, and overall well-being, there remains substantial uncertainty and deliberation close the reasonable efficiency of numerous hydration tactics across diverse settings (Li et al, 2024). Therefore the main aim of this study was to test effectiveness of different hydration strategies during exercise sessions among physical education university students, Zambezi Region Katima Mulilo.

Research question

- What are the effectiveness of different hydration strategies during exercise sessions among physical education university students?

Materials and methods

This research paper utilised quantitative approach in its design to collect and analyse gathered data. The sample consisted of n = 100 participants (physical education university students in Katima Mulilo of the Zambezi Region) who were purposively selected on the basis of their active involved with PE. Data was collected using questionnaires and analysed using SPSS software to find frequencies and percentage, which was later presented in graphs,

Results

This segment of this paper presents the results derived from the research question " What are the effectiveness of different hydration strategies during exercise sessions among physical education university students?".

Figure 1 below shows the results of hydration before the commencement of the physical activity, 31% of PE male participants hydrated by drinking 2-10 ounces (200-300ml) of water 2-4 hour prior to the activity commencement, whilst 69% of male participants did not hydrate at all. On the other hand, only 18% of female participants drunk 2-10 (200-300ml) of water 2-4 hours before the physical activity start, 82% of female participants did not drink water prior to the beginning of the exercise. These results further shows that more male participants hydrated (31%) more than female participants (18%) prior to exercise commencement, moreover, results shows that there were a fewer number of male participants (67%) who engaged in physical activity without drinking compared to female participants (82).

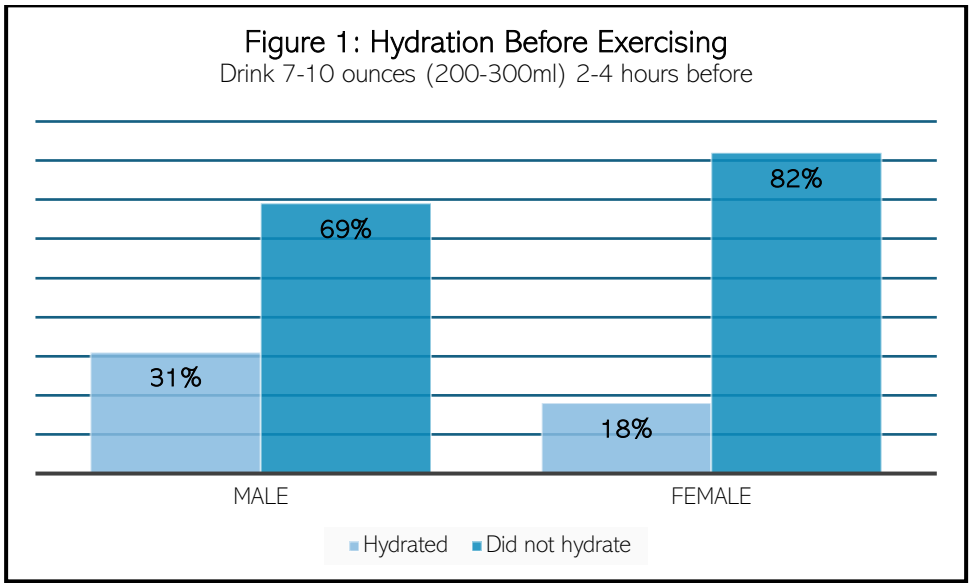


Figure 2, below show the results of hydration while exercising, 15% of male participants drunk 4-8 ounces (120-240ml) every 15-20 minutes, whilst 35% of male participants opted to engaged in the physical activities without hydrating at all. Whereas, on the other hand, only 9% of female participants drunk 4-8 ounces of water (120-240ml) every 15-20 minutes, and 41% of female participants did not drink or hydrate during the physical activity. Furthermore, these results show that there were a lot male participants who hydrated (15%) during exercising session compared to female participants (9%), whereas the results additionally shows that more female participants (41%) did not hydrate compared to male 35% who did not drink water while exercising as well.

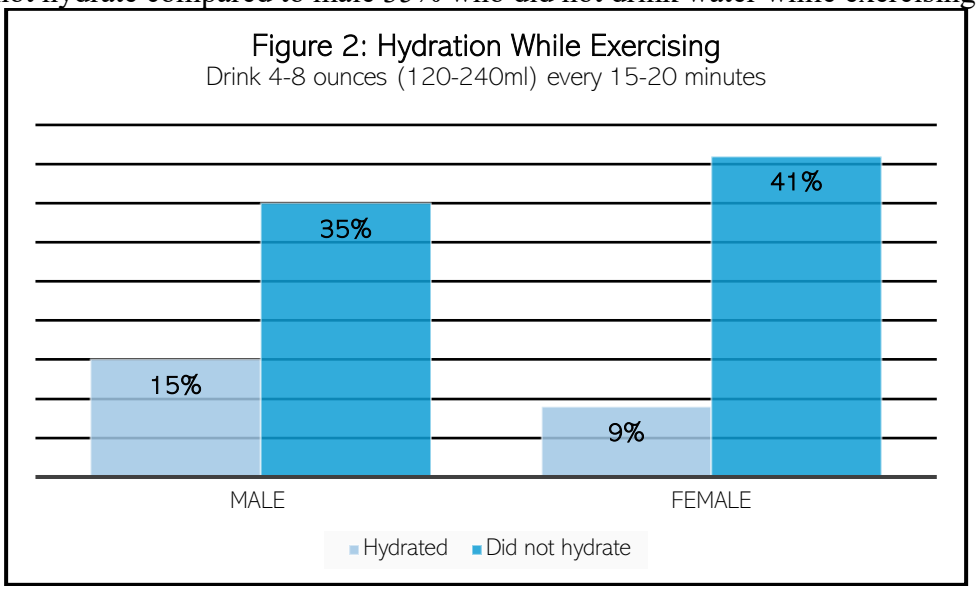
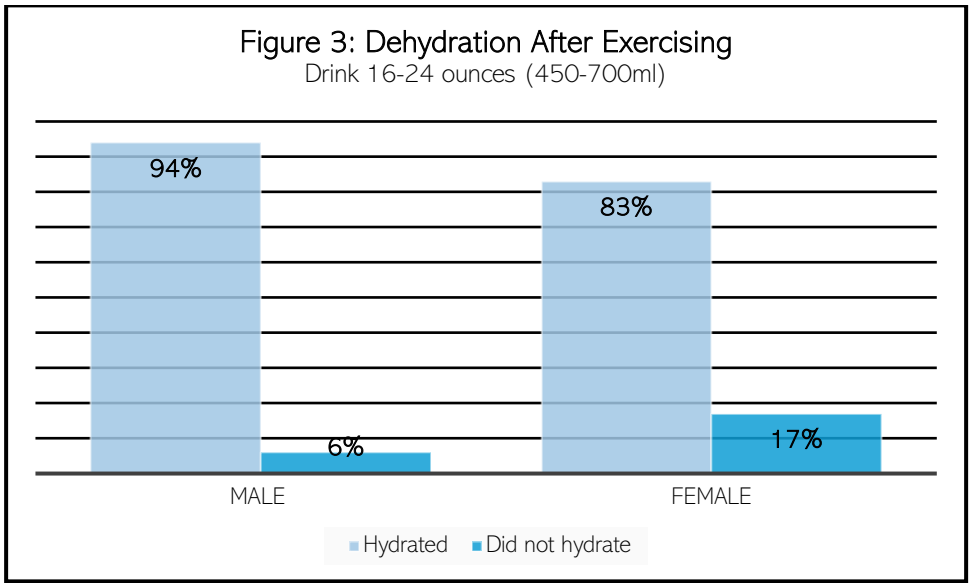


Figure 3, below show the results of hydration after exercising, 94% of male participants drunk 16-24 ounces (450-700ml) of water after they have completed the physical activity, only 6% of male participants did not hydrate. On the other hand, 83% of female participants hydrated between 16-24 ounces (450-700ml) of water after they finished engaging in a physical activity, 17% of female opted not to hydrate after. These results show a comparative status to which male participants hydrated (94%) more than female (83%). On the other hand, more female participants (17%) opted not to hydrate immediately after the physical activity compared to only (6%) of male participants.



Discussion

This section of this paper presents discussion of the results derived from the research key question "What are the effectiveness of different hydration strategies during exercise sessions among physical education university students?". The results of this study in figure 1 study shows the results of hydration before the commencement of the physical activity, 31% of PE male participants hydrated by drinking 2-10 ounces (200-300ml) of water 2-4 hour prior to the activity commencement, whilst 69% of male participants did not hydrate at all. On the other hand, only 18% of female participants drunk 2-10 (200-300ml) of water 2-4 hours before the physical activity start, 82% of female participants did not drink water prior to the beginning of the exercise. These results further shows that more male participants hydrated (31%) more than female participants (18%) prior to exercise commencement, moreover, results shows that there were a fewer number of male participants (67%) who engaged in physical activity without drinking compared to female participants (82). These results are supported by Cadence (2024) hydrating or drinking water 2 to 4 hours prior to physical activity is vital for the reason that it warrants you start workout in a euhydrated (generally hydrated) condition, which is vigorous for upholding physical bodily functions and increasing performance. This manner lets adequate time for your body to soak up the fluid and emit any excess (allowing urine output to restore to normal), stopping an fast need to use the toilet during exercises. Moreover, peior to exercise, athletes frequently neglect to hydrate appropriately and start to exercise in a hypohydrated condition (for instance in dehydrated state), which indicates to the condition or state of being in a minus water balance. As slight as a 2-3% body mass shortage is sufficient to negatively impact physical and psychological performance while exercise, specifically when the exercise is commenced in warm conditions (Thomas, 2016).

Results in Figure 2, show hydration while exercising, 15% of male participants drunk 4-8 ounces (120-240ml) every 15-20 minutes, whilst 35% of male participants opted to engaged in the physical activities without hydrating at all. Whereas, on the other hand, only 9% of female participants drunk 4-8 ounces of water (120-240ml) every 15-20 minutes, and 41% of female participants did not drink or hydrate during the physical activity. Furthermore, these results show that there were a lot male participants who hydrated (15%) during exercising session compared to female participants (9%), whereas the results additionally shows that more female participants (41%) did not hydrate compared to male 35% who did not drink water while exercising as well. Drinking water or hydration is important during exercise for the reason that it helps normalise body temperature,

maintain performance, and stop health concerns. Dehydration or ack of fluids in the body can lead to exhaustion, reduced endurance, muscle pains, dizziness, and force your heart work intense to pump blood to all parts of the body. Therefore remaining hydrated lets muscles to work effectively and help in healing and recovery (Clinic Barcelona, 2023).

Moreover, results in figure 3, shows hydration after exercising, 94% of male participants drunk 16-24 ounces (450-700ml) of water after they have completed the physical activity, only 6% of male participants did not hydrate. On the other hand, 83% of female participants hydrated between 16-24 ounces (450-700ml) of water after they finished engaging in a physical activity, 17% of female opted not to hydrate after. These results show a comparative status to which male participants hydrated (94%) more than female (83%). On the other hand, more female participants (17%) opted not to hydrate immediately after the physical activity compared to only (6%) of male participants. Drinking water or hydration after exercising is critical for recovery or healing for the reason that it replaces fluids lost during sweating process, transfers essential nutrients for muscle restoration, and assist with the flushing out of the unwanted bodily waste products (Casa et al, 2019). Remaining hydrated help the body's healing or recovery processes by decreasing swelling and soreness, returning energy levels, and stopping muscle cramps (Judge, 2021).

Conclusion

Hydration or drinking water before, during and after exercising is critical for keeping performance and care in physical education activities. The most efficient tactic centers on active water balance, starting with sufficient hydration prior to exercise commence. In physical activity sessions, the mode of activity states the best method: quicker, lesser-intensity performances frequently demand simply plain water.

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