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"Comparison of Dietary Habits and sedentary behaviors in Kuwaiti Swimmers and Water Polo College Students during Pre-Season: A Cross-Sectional Study"

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Abstract

Introduction: There are a very limited studies which examined the dietary habits and sedentary behaviors among Kuwaiti college age student athletes. Therefore, the purpose of the current study is to assess the dietary habits, and sedentary behaviors in a group of Kuwaiti male swimmers and water polo players. Methods: A cross- sectional study was conducted on two groups Swimmers (*n* =26) and water polo playies (*n* =23) from the college of Basic Education. Weight, height, sedentary behaviors , and dietary habits were all assessed using a previously validated questionnaire. Results: water polo players were significantly had higher BMI value than swimmers (27.2 ± 3.4 vs. 26.3 ± 4.5 respectively; *p* = 0.0002). Moreover, water polo players consumed significantly more fast food intake per week than swimmers (3.27 ±0.14 Vs. 2.75 ±0.13, respectively; p= < 0.008) and French fries/potato chips (2.73 ±0.14) Vs. 5.97 ±0.14), respectively; p= < 0.001). In addition, water polo players consumed significantly more Cake, donut or biscuits per week than swimmers (2.59 ±0.15 Vs. 5.38 ±0.14), respectively; p= < 0.001). finally, water polo players consumed significantly more Sweets or chocolates per week than swimmers (3.26 ±0.16 Vs. 4.90 ±0.15), respectively; p= < 0.001). Conclusions: Coaches, conditioners, and nutritionists could use this information to better understand the dietary habits of their athletes as well as to education the athletes and their parents about optimal nutrition. All athletes should consume adequate fruits and vegetables to obtained micronutrients and antioxidant which increase health and body functions.

Key words: College students; dietary habits; Swimming; Water Polo; sedentary behaviors.

Introduction

Nutritional status is determined by the adequacy of dietary intake to meet the nutritional demands of both training and competition in sport performance (1). Nevertheless, this challenge is especially evident among college athletes, who frequently experience multiple issues that undermine their dietary choices (2-4). Those factors encompass a raised demand for energy and macronutrients brought about by hard training regimes, frequent travel obligations for competitions, and the academic workload of college life (5). This difficulty is also exacerbated during the pre-season period, which is usually marked by the increment in training volumes with the intention of attaining a rapid competition readiness. Therefore, limited energy intake during this time period puts collegiate athletes at risk of developing a state of low energy availability (5).

Low energy availability when it is experienced at a clinical level, results in the disruption of metabolic and endocrine function, and consequently, the adverse effects on reproductive, bone, and cardiovascular health are the results (6). In addition, it greatly affects sports performance and increases the chance of injuries (7). The total outcome of these physiological and performance-associated effects are summed up within a condition called Relative Energy Deficiency in Sport (RED-S) that poses a very serious concern to athletes and coaches in terms of both optimizing sports performance and safeguarding overall well-being (8).

In the athlete demographics inherently susceptible to poor nutrition and energy availability, college swimmers present as the most endangered group. The rigorous training programs, which are frequently complemented by the requirement to have a lean body to achieve optimal performance, are significant problems. These difficulties are intensified by the multiplicity of academic and extracurricular activities associated with life in higher institutions. Therefore, the understanding of nutrient intake and dietary behaviors of collegiate swimmers, with the Kuwaiti context in the fore, is crucial. There at very limited studies regarding the dietary habits and sedentary of Kuwaiti college age athletes. For this reason, the purpose of the current study is to evaluate the dietary habits and sedentary behaviors in group of male Kuwaiti swimmers and water polo during

the pre-season periods.

Material and Methods

Participants

The college of Basic Education Institutional Review Board (IRB) approved this study. This was a cross-sectional study including Kuwaiti male swimmers and water polo players, who were randomly selected from the college of basic education. The total number of swimmers was 26 and water polo players was 23. Informed written consent was obtained from all the subjects. The Authors collected all the data before the start of the regular swim and water polo seasons (May-2023).

Anthropometric measurements

Body Mass Index (BMI) & Fat percentage

A balance scale was utilized to measure the participants' mass (in kilograms) and height (in centimeters). The height is then converted to meters (m). Then, the BMI was calculated as follows: mass (kg)/ height squared (m2). Body fat percentage, was determined noninvasively using a Tanita Body Composition Analyzer (BC-1000 Madison, WI).

Assessments of dietary habits and sedentary behaviors

We have used the Arab Teen Lifestyle Study (ATLS) questionnaire for the assessment of dietary habits, sedentary behaviors (9-10). The instruments has been previously shown to be a reliable and valid instrument for assessment of dietary habits, sedentary behaviors among youth and young adults (11-12).

certain frequency of dietary intake during a typical (usual) week was also assessed by ATLS questionnaire. Participants were asked to state how many times per week they consume breakfast, vegetables (cooked and uncooked), fruits, milk and dairy products, sugar-sweetened drinks (including soft drinks), fast foods, donuts/cakes, sweets and chocolates and energy drinks. The questions covered both healthy and unhealthy dietary habits. The Participants was given a choice of answers, ranging from zero intake (never) to a maximum intake of 7 days per week (every day).

In addition, sedentary behaviors were assessed by asking the participant about the amount of time spent on screen activities, including television viewing, computer games, recreational use of the internet and social media during weekdays and weekends. For

total screen viewing time cut-off values, we used above or below 2 hours per day (13)

Data and statistical analysis

The data entered into a coded SPSS data entry sheet, checked, cleaned and analyzed using IBM SPSS software, version 22. For statistical analysis, Chi-squared test was used to analyze categorical variables, a paired two-way sample *t*-test was used to detect any significant differences between the mean values in selected lifestyle habits by Kuwaiti male swimmers and water polo players as well as demographic and anthropometric variables. Statistical significance was set at $p < 0.05$ for all analyses. Data are presented as mean ± standard deviation (SD) unless otherwise stated. Body Mass Index (BMI) levels were classified into 2 sections:(a) normal weight (< 25 kg/m^2); and (b) overweight and obese (> 25 kg/m^2) (14).

Results

Table 1 shows the Anthropometric characteristics of both groups (swimmers vs. water polo players. swimmers and water polo players were similar in age, height, and %BF ($p > 0.05$); however, water polo players were significantly heavier than swimmers (27.2 ± 3.4 vs. 26.3 ± 4.5, respectively; $p = 0.0002$). Additionally, water polo players had significantly BMI value than swimmers (27.2 ± 0.4 vs. 26.3 ± 0.8, respectively; $p < 0.001$)

Table 1. Anthropometric characteristics of both Swimmers and waler polo players groups (means ± standard deviations or percentage).

Variable	Swimmers (N=26)	Water Polo players (N=23)
Age (year)	21.5± 1.3	21.1 ± 2.1
Weight (kg)	80.3 ± 5.8	84.5 ± 3.2 *
Height (cm)	174.7 ± 7.1	176.3 ± 4.3
BMI (kg/m^2)	26.3 ± 0.8	27.2 ± 0.4 *
Body fat percent (%)	21.3 ± 2.6	22.4 ± 4.7

* *p* < 0.005 for the difference between the Swimmers and waler polo players (t-test for independent samples or Chi-Square tests).

BIM= Body Mass Index

Table 2 shows the differences in selected dietary habits and

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sedentary behaviors between swimmers and water polo players. There was no significant difference between the two groups in average sedentary behaviors (screen time). The results of T-test revealed that there are no significant different between Swimmers and water polo players in breakfast intake, vegetables intake, vegetables intake, fruit intake, milk/dairy products intake, energy drinks intake. However, water polo players consumed significantly more sugar-sweetened drink per week than swimmers (6.96 ± 0.16 Vs. 3.79 ± 0.17, respectively; p= < 0.001). Moreover, water polo players consumed significantly more fast food intake per week than swimmers (3.27 ±0.14 Vs. 2.75 ±0.13, respectively; p= < 0.008) and French fries/potato chips (2.73 ±0.14) Vs. 5.97 ±0.14), respectively; p= < 0.001). In addition, water polo players consumed significantly more Cake, donut or biscuits per week than swimmers (2.59 ±0.15 Vs. 5.38 ±0.14), respectively; p= < 0.001). finally, water polo players consumed significantly more Sweets or chocolates per week than swimmers (3.26 ±0.16 Vs. 4.90 ±0.15), respectively; p= < 0.001).

Table 2. Means and (standard errors) of dietary habits between male college age Kuwaiti swimmers and water polo players.

Variable	Swimmers (n = 26)	Water players (n = 23)	Polo	*p* value *
Average screen time (hours/day)	5.62 (0.22)	5.49 (0.20)		0.662
Breakfast intake (day/week)	3.39 (0.18)	2.61 (0.16)		0.102
Vegetables intake (day/week)	3.76 (0.17)	2.85 (0.16)		0.568
Fruit intake (day/week)	3.18 (0.15)	2.59 (0.15)		0.202
Milk/dairy products intake (day/week)	4.41 (0.16)	2.93 (0.16)		0.162
Sugar-sweetened drink intake (day/week)	3.79 (0.17)	6.96 (0.16)		< 0.001
Fast food intake (day/week)	3.27 (0.14)	2.75 (0.13)		0.008
French fries/potato chips intake (day/week)	2.73 (0.14)	5.97 (0.14)		< 0.001
Cake, donut or biscuits intake (day/week)	2.59 (0.15)	5.38 (0.14)		< 0.001

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Sweets or chocolates intake (day/week)	**3.26 (0.16)**	**4.90 (0.15)**	**< 0.001**
Energy drinks intake (day/week)	**1.23 (0.13)**	**1.34 (0.13)**	**0.568**

*** T-test for independent samples for the differences between swimmers and water polo players .**

Discussion

The purpose of the present study was to assess the dietary habits and sedentary behavior during the pre-season in a Kuwaiti male swimmers and water polo players college age students. To the best of our knowledge, this is the first study which examined dietary habits and sedentary behavior among Kuwaiti water based sport during the pre-season. The primary outcome of the current study is the mean BMI of swimmers is 26.3 ± 0.8 and the mean BMI of water polo players is 27.2 ± 0.4. Both groups' BMI consider to be overweight (14). This increase in BMI in both swimmers and water polo players might be due to spisifunty of sport because (15). more over our results are cisited with other studies (16). Another reason for this increase might be due to the time testing, as the parisipants were at off-season period and they have not exercise for almost three months.

Interestingly, the current investigation showed that water polo players had significantly higher BMI value and mean body weight than swimmers. These finding are unsurprisingly, and there are a reasonable reason behind this finding because the water polo players significantly consumed more sugar-sweetened drink, fast food, french fries/potato chips, cake, donut or biscuits, sweets or chocolates.

Limitations of the Study

Although it has great importance, this research has its limitations. As with any investigation that relies on self-reported dietary intake data, the risk of misreporting as well as underreporting is there (17). Another constraint is the use of bioelectrical impedance analysis (BIA) to measure body fat percentage. Earlier studies revealed the tendency of BIA to overestimate body fat percentage with regard to athletes (18).

Moreover, the small sample size of the study population can be a limitation on the applicability of the findings to all swimmers and water polo players. Hence, one has to be careful when generalizing these findings to more college swimmer groups and water polo players. More and better studies focusing on large and

heterogeneous cohorts could be the next steps to validate and further explore these results. We only included male athletes in the study that due to difficulty to recruit female athlete especially water based sport.

Finally, the authors only recruited water-based sports such as swimming and water polo. Thus, we recommended other researches to examine dietary habits from different types of land based sport such as football, handball, and track and field.

Conclusion

Coaches, conditioners, and nutritionists could use this information to better understand the dietary habits of their athletes as well as to education the athletes and their parenets about optimal nutrition. All athletes should consume adequate fruits and vegetables to obtained micronutrients and antioxidant which increase health and body functions (5). On other hand they should consume less fast food sugar-sweetened drink, french fries/potato chips, cake, donut or biscuits, sweets or chocolates to maintain a health body weight and BMI. Being overweight might negatively effect athletes' performance (16).

Competing interests

The authors declare that they have no competing interests.

References

1. **Reilly, T.; Woodbridge, V. Effects of moderate dietary manipulations on swim performance and on blood lactate-swimming velocity curves. *Int. J. Sports Med.* 1999, *20*, 93–97.**
2. **Beermann, B.L.; Lee, D.G.; Almstedt, H.C.; McCormack, W.P. Nutritional Intake and Energy Availability of Collegiate Distance Runners. *J. Am. Coll. Nutr.* 2020, *39*, 747–755.**
3. **Magee, M.K.; Lockard, B.L.; Zabriskie, H.A.; Schaefer, A.Q.; Luedke, J.A.; Erickson, J.L.; Jones, M.T.; Jagim, A.R. Prevalence of Low Energy Availability in Collegiate Women Soccer Athletes. *J. Funct. Morphol. Kinesiol.* 2020, *5*, 96.**
4. **Logue, D.M.; Madigan, S.M.; Melin, A.; Delahunt, E.; Heinen, M.; Donnell, S.M.; Corish, C.A. Low Energy Availability in Athletes 2020: An Updated Narrative Review of Prevalence, Risk, Within-Day Energy Balance, Knowledge, and Impact on**

Sports Performance. *Nutrients* 2020, *12*, 835.

5. **Thomas, D.T.; Erdman, K.A.; Burke, L.M. American College of Sports Medicine Joint Position Statement. Nutrition and Athletic Performance. *Med. Sci. Sports Exerc.* 2016, *48*, 543–568**
6. **Areta, J.L.; Taylor, H.L.; Koehler, K. Low energy availability: History, definition and evidence of its endocrine, metabolic and physiological effects in prospective studies in females and males. *Eur. J. Appl. Physiol.* 2021, *121*, 1–21.**
7. **Melin, A.K.; Heikura, I.A.; Tenforde, A.; Mountjoy, M. Energy Availability in Athletics: Health, Performance, and Physique. *Int. J. Sport Nutr. Exerc. Metab.* 2019, *29*, 152–164.**
8. **Mountjoy, M.; Sundgot-Borgen, J.K.; Burke, L.M.; Ackerman, K.E.; Blauwet, C.; Constantini, N.; Lebrun, C.; Lundy, B.; Melin, A.K.; Meyer, N.L.; et al. IOC consensus statement on relative energy deficiency in sport (RED-S): 2018 update. *Br. J. Sports Med.* 2018, *52*, 687–697**
9. **Al-Hazzaa HM, Musaiger AO; ATLS Research Group. Arab Teens Lifestyle Study (ATLS): Objectives, design, methodology and implications. Diabetes Metab Syndr Obes 2011; 4: 417-426.**
10. **Al-Hazzaa HM, Abahussain N, Al-Sobayel H, Qahwaji D, Musaiger AO. Physical activity, sedentary behaviors and dietary habits among Saudi adolescents relative to age, gender and region. Int J Behav Nutr Phys Act 2011; 8: 140.**
11. **Al-Hazzaa, HM, Al-Sobayel, HI, Musaiger, AO. Convergent validity of the Arab Teens Lifestyle Study (ATLS) physical activity questionnaire. Int J Environ Res Public Health 2011; 8: 3810-3820.**
12. **Al-Hazzaa HM, Al-Ahmadi M. A Self-reported questionnaire for the assessment of physical activity in youth 15-25 years: Development, reliability and construct validity. Arab J of Food and Nutrition 2003; 4 (8): 279-291.**
13. **American Academy of Pediatrics: Committee on Public Education. American Academy of Pediatrics: Children, adolescents, and television. *Pediatrics* 2001, 107: 423-426.**
14. **Nuttall FQ. Body mass index: obesity, BMI, and health: a critical review. Nutrition today. 2015 May;50(3):117.**
15. **Tanaka H. Swimming exercise: impact of aquatic exercise on cardiovascular health. Sports medicine. 2009 May;39:377-87.**

16. Pyne DB, Anderson ME, Hopkins WG. Monitoring changes in lean mass of elite male and female swimmers. International Journal of Sports Physiology and Performance. 2006 Mar 1;1(1):14-26.
17. Ravelli, M.N.; Schoeller, D.A. Traditional Self-Reported Dietary Instruments Are Prone to Inaccuracies and New Approaches Are Needed. *Front. Nutr.* 2020, *7*, 90
18. Esco, M.R.; Snarr, R.L.; Leatherwood, M.D.; Chamberlain, N.A.; Redding, M.L.; Flatt, A.A.; Moon, J.R.; Williford, H.N. Comparison of total and segmental body composition using DXA and multifrequency bioimpedance in collegiate female athletes. *J. Strength Cond. Res.* 2015, *29*, 918–925.