

# A not so pleasant surprise

## Abstract

Going to gym is generally considered beneficial and we as physicians definitely recommend exercise for every individual due to its various benefits on the mind as well as the body. However overdoing anything may have dire consequences and this applies to working out at gym as well. There have been instances where due to extreme over exercise and incompatible exercise atmosphere in an unaccustomed individual, resulted in adverse outcomes which include rhabdomyolysis and acute kidney injury and hence it is always advisable to have a systematic approach to exercise. Consulting an expert before embarking on your exercise regime is beneficial. Here we present 2 cases related to gym which could have put the kidneys into peril.

**Keywords:** Gym, over exercise, acute kidney injury, supplements

The excessive consumption of gym supplements can have harmful effects on the kidneys.

**Caffeine and Creatine:** Caffeine and creatine are common ingredients in gym supplements. They promote endurance and enable high-intensity workouts. However, excessive consumption of these ingredients can accelerate the heart rate and potentially irreversibly impact blood pressure.

**Steroids:** Steroids such as Nandrolone Decanoate and Testosterone are consumed to enhance performance. However, they have harmful effects on the kidneys, and their use can lead to kidney damage.

**Diuretics:** Young adults are also found using diuretics to counter the puffiness encountered after excessive use of steroids or with the carbohydrates found in duplicate formulations. This is used as a means of inducing extracellular dehydration to achieve a leaner image. However, the use of diuretics can lead to kidney damage.

High uric acid levels following excess protein turnover in the body further promote kidney stone formation and gout, which are seen commonly in these adults.

Volume 11 Issue 2 - 2024

**Abhishek Praharaj, Mainak Mandal, Soumyadeep Maity, Poulomi Das, Abhishek Chanda, Saddam Hossain, Nirmalya Roy**  
Department Of General Medicine, KPCMCH, Kolkata, India

**Correspondence:** Mainak Mandal, Department of General Medicine, West Bengal University of health sciences (WBUHS), KPCMCH, Kolkata, India,  
Email mainakmandal99@gmail.com

**Received:** August 17, 2024 | **Published:** November 04, 2024

## Introduction

Going to the gym and taking health supplements have become a very common practice currently. Approximately 2.4% of the world's population goes to the gym with about 58% being males.<sup>1</sup> Overall, 82% of all fitness center users consumed at least one supplement per week.<sup>2</sup> The most prevalent products used were protein powders and drinks in order to improve their muscle bulk as well as exercise performance. Moreover, people also indulge in over-exercise leading to many unique problems. Here we report 2 such cases which could have put the kidneys into peril.

## Case report

### Case 1

An 18 year old boy who had never been into exercise joined a gym soon after his board examinations and underwent strength training for an hour. On that particular day the air conditioning of the gym was not working leading to excessive perspiration. By evening, the boy started complaining of severe myalgia and passing of reddish urine, moreover his urine volume was low and the next day his tests revealed that his urine routine examination was remarkable for blood being present. Other parameters showed LDH to be 3136 U/L, CPK-1000 U/L, Total bilirubin- 1.7 mg/dl, SGPT- 75 IU/L, SGOT -358 IU/L, GGT- 21 U/L and ALKP- 475 U/L. The reports eventually got normalized in the course of 10 days and the patient was advised to keep himself well hydrated during that period with electrolyte rich formulations

such as Gatorade (electrolyte rich sports drink has a serving size of 600ml comprising of 306mg/13.7mmol of sodium, 135mg/3.6mmol of potassium, 36gms of carbohydrate and provides 618 Kilojoules of energy).<sup>3</sup> Hence overzealous exercise in an unaccustomed subject in an incompatible atmosphere could result in adverse outcomes jeopardizing the kidneys and resulting in AKI.

### Case 2

A 51 year old male diabetic patient was referred to us for glycemic control after having been diagnosed as a case of CKD elsewhere. His HbA1c was 9%, FBS- 232 mg/dl, PPBS- 320 mg/dl, Urea- 38 mg/dl and Creatinine - 9.2 mg/dl with Hb of 13 gm/dl. The man looked otherwise healthy with no anorexia, nausea or recent history of any weight change. He had recently joined a gym and was encouraged by the trainer to take supplements in order to build up muscles. Certain striking facts that alerted us were that he had a normal Hb value, USG showed normal sized kidneys with preserved Corticomedullary differentiation and the lack of any uremic features. Further interrogation revealed that this gentleman was taking supplements containing creatine which led to reaction with Jaffe kinetics assay for creatinine resulting in an abnormal value of creatinine.<sup>4-7</sup>

## Conclusion

These two cases illustrate two very important aspects related to gyming. Case 1 shows the importance of hydration and a proper environment being a prerequisite so as to keep exercise beneficial

to health. Unaccustomed exercise in a hot environment can lead to rhabdomyolysis and subsequent Acute Kidney Injury akin to heat stroke, hence proper counseling and provision of certified instructors along with self-hydration and ambient temperature is necessary.

Case 2 illustrates that lab errors which are often forgotten can be an important source of misjudgment of reports and due importance should be accorded to proper history taking and basic clinical examination. In this case a normal hemoglobin value, normal kidney size and preserved Corticomedullary differentiation with lack of uremic features had been the turning point.

### The American college of sport medicine's (ACSM) general exercise guidelines

#### The recommendation for healthy adults is:

- I. Moderate-intensity aerobic activity for a minimum of 30 minutes, five times per week or vigorous-intensity aerobic activity for a minimum of 20 minutes, three times per week
- II. Resistance exercises for the major muscle groups a minimum of 2 times per week
- III. Flexibility exercises for the major muscle groups a minimum of 2 times per week

#### What is moderate-intensity aerobic activity?

- I. The individual is able to talk, but not sing during the exercise. Examples include brisk walking, slow biking, doubles tennis, active home chores, etc.

#### What is vigorous-intensity aerobic activity?

- I. Inability to talk and being slightly out of breath. Examples include jogging, fast bicycling, singles tennis, swimming laps, etc.

#### What if I have health constraints or have never exercised before?

- I. Talking to a physician before beginning a new exercise program can be beneficial! Physicians can assess and provide guidelines

prior to engaging in workouts. Light intensity exercise is appropriate for most apparently healthy adults without the need for a medical clearance from a physician.

- II. Discretionary sedentary time should be limited to a maximum of two hours. Decreasing sedentary time and engaging in additional physical activity have health benefits regardless of the overall duration of the activities.

### Acknowledgments

None.

### Conflicts of interest

There is no conflict of interest.

### References

1. IHRSA (International Health Racquet & Sportsclub Association). *The 2021 IHRSA Global Report*. 2021.
2. Mettler S, Bosshard JV, Häring D, et al. High Prevalence of Supplement Intake with a Concomitant Low Information Quality among Fitness Center Users. *Nutrients*. 2020;12(9):2595.
3. <https://www.gatorade.com.au/product-range/gatorade-sports-drink>
4. El Khoury D, Antoine Jonville S. Intake of Nutritional Supplements among People Exercising in Gyms in Beirut City. *J Nutr Metab*. 2012;2012:703490.
5. Kumar R, Kumar S, Kumar A, et al. Exercise-Induced Rhabdomyolysis Causing Acute Kidney Injury: A Potential Threat to Gym Lovers. *Cureus*. 2022;15;14(8):e28046.
6. Syal K, Banerjee D, Srinivasan A. Creatinine estimation and interference. *Indian J Clin Biochem*. 2013;28(2):210–211.
7. Thompson WR, Gordon NF, Pescatello LS. *ACSM's guidelines for exercise testing and prescription*. 8<sup>th</sup> edn. Philadelphia; Lippincott Williams & Wilkins. 2010.