

## Re: Urinary Sodium and Potassium Excretion Following Karate Competitions

### SIR,

In the previous issue of the *Iranian Journal of Kidney Diseases* (volume 3, number 2, page 86), Afshar and colleagues reported their experience of urinary excretion of sodium and potassium in karate practitioners, following competitions.<sup>1</sup> The authors concluded that karate may have no influence on urinary excretion of electrolytes. This conclusion was attributed to the short duration and anaerobic nature of kumite competitions. However, some of the reported data needs clarification and further elaboration.

First, the 24-hour urine values for volume and creatinine shown in the article's Table for laboratory data of karate competitors are variable between the two groups for both before and after the match. In the presence of such a difference, it would not be appropriate to compare the urinary excretion of electrolytes. Also, the transtubular potassium gradient, which is a urinary index of potassium excretion based on osmolality, would be fallacious in such a setting.

Second, the study does not reveal any levels of serum renin, aldosterone, or plasma rennin activity, which could have been beneficial in correlation of urinary electrolytes.

Third, no documentation has been made for weight changes, urine protein excretion, and estimated glomerular filtration rate, without which the role of karate and fluid intake-excretion balance could ever be stated. In an analysis, Kutlu and Guler

showed that taekwon-do athletes were slightly hypohydrated in the morning on each of the test days, but there was no evidence to suggest that most of the athletes further restricted their fluid intake to make weight.<sup>2</sup> Hence, the importance of weight fluctuations cannot be ignored.

Fourth, the values of uric acid, fractional sodium excretion, and lactate dehydrogenase need to be provided in such data interpretation. It is hard to rule out any prerenal component after such exercises without complete laboratory parameters.

Finally, the study included all men and it is unfair to extrapolate the results to the other sex. It has been seen that female sex is a risk factor of exercise-induced electrolyte abnormalities by the virtue of their lower body mass index, thereby rendering them more susceptible to increased dilutional effects of excess fluid retention because of a smaller total body water volume.<sup>3</sup>

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### REFERENCES

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2. Kutlu M, Guler G. Assessment of hydration status by urinary analysis of elite junior taekwon-do athletes in preparing for competition. *J Sports Sci.* 2006;24:869-73.
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### Reply by Authors

We would like to thank Gupta and colleagues for their attention and viewpoints. Hereby, brief clarification is presented. Unfortunately, we did not have facilities to measure rennin, aldosterone, and plasma rennin activity tests. These measurements

Characteristics of Karate Competitors\*

Characteristics	Mean Values
Age, y	18.9 ± 0.9
Body weight, kg	67.2 ± 14.3
Height, cm	173.1 ± 28.9
Body mass index, kg/m <sup>2</sup>	23.0 ± 0.1
Training time, h/w	9.0 ± 0.5
Postexercise weight changes, kg	0.52 ± 0.03
Glomerular filtration rate, mL/min	116.0 ± 4.0
Urinary protein before match, mg/d	70.68 ± 12.50
Urinary protein after match, mg/d	196.05 ± 70.88

\*The tables contains additional information for the study on electrolyte changes in karate competitions published by Afshar and colleagues in the *Iranian Journal of Kidney Diseases*, volume 3, number 2, page 86.

in our country are not very accurate and reliable, and they would need prior co-ordinations which was not feasible in the competitions venue.

These competitions were held in winter and we were not worried about pre-renal azotemia, because of the short duration of competitions, judicious fluid intake, appropriate weight of karatekas which obviated fluid restriction for maintaining ideal body weight for competitions, and lesser probability of traumatic rhabdomyolysis compared with long-lasting exercises; however, it was reasonable to request these parameters. It is an imperfection in our study that should be considered in future studies. Also, urine color, specific electrical conductance, and osmolality are poor indicators of hydration status measured from the balance between fluid intake and urine output up to 6 hours postexercise.<sup>1</sup> Indeed, postexercise proteinuria limits the value of these measurements.

Although in the recent years, women sports have been greatly progressed in our country, there are many obstacles and limitations in this way to

recruit women as well in the study. We preferred to conduct our study in men and did not declare that our findings are generalizable to the other sex, particularly regarding the females' total body water, hormonal changes, and menstrual cycle, which influence fluid and electrolytes balance in women.

The additional Table shows further elaborations.

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