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RELATIONSHIP BETWEEN THE STABILITY AND EMOTIONAL STABILITY OF SPORTS PERFORMANCE AND CHANGES IN GUT MICROBIOTA WITH MENTAL AND PHYSICAL STRESS

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AIM

In this study, we investigated in university male long-distance runners whether the classification of gut microbiota changed according to an athlete's subjective condition. In addition, we used the Big-Five Factor Markers of personality traits to investigate whether changes in the intestinal microbial flora were related to emotional stability, with the aim of obtaining basic material useful for the field.

METHOD

Forty-one male long distance athletes (mean age, height, weight and 5000m performance; 19.9 ± 3.0 year, 171.6 ± 5.0 cm, 58.1 ± 2.6 kg and $15'31 \pm 31''$) participated in this study. The athletes were asked to take two stool samples for gut microflora analysis, one while in a "normal" condition (decided subjectively) and one when in a "worse" condition, excluding physical conditions such as when clearly affected by a common cold. Gut microbiota were classified by terminal restriction fragment length polymorphism analysis. The performance stability of each athlete was evaluated from changes in his competition

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performance and usual training record, assessed by the athlete's coach using a ten-point subjective evaluation. We examined the relationship between emotional stability and performance stability using the Big-Five Factor Markers inventory

RESULTS

There was a significant correlation between emotional stability and performance stability ($r=0.621$, $p<0.05$, $n=41$). Based on this result, the athletes were divided into high emotional stability and low emotional stability groups, and the amount of change in the gut microbiota classification between the "normal" condition and "worse" condition stool samples were examined. **Conclusions:** There was no significant difference between the two groups in the amount of change in the intestinal microbial community. However, the data suggested that the gut microbiota differs greatly between individuals. Further investigation of the relationship between detailed changes in gut microbiota and individuals' mental and physical condition is warranted.