

## Extraction of the Characteristic Attributes of Student Athletes using a Questionnaire using the Support Vector Machine

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### Abstract

Providing special support for student athletes and creating future educational strategies are major issues for many universities. In this study, we created a questionnaire that comprised 77 multiple choice questions. After collecting the responses from 100 student athletes and 141 other students, we analyzed the characteristic attributes of student athletes. We considered the 278 combinations of question items and the response choices as the attributes to represent the students. A student is represented as a 278 dimensional boolean vector. Then, we applied the support vector machine (SVM) machine learning method with feature selection. The result confirmed that it is possible to distinguish between student athletes and other students with a 90% accuracy based on 16 characteristic attributes of the students, such as the following: they spend a lot of time in athletics clubs and not on their studies; they want to work for an economically rich life; they think that it is advantageous to search for jobs or complete their graduation if they have good grades; they have less interests in the international activities in campus life. Students aiming for professional and semiprofessional athletic careers are motivated for studying because of the competitiveness cultivated in their athletic careers.

*Keywords:* Private University; Questionnaire survey; Student Athletes; Support vector machine

### 1 Introduction

In the United States, the NCAA (National Collegiate Athletic Association) exists as an organization that supervises over college sports. The NCAA is represented by more than 1000 organizations including universities and supports student athletes. The NCAA has implemented various rules and guidelines. Particularly, the academic rules are strict, and students with low GPA scores, or less than a certain amount of credits are not allowed to participate in games or events [1]. In recent years, a campaign attempting to establish a Japanese version of the NCAA has been active.

The Asahi newspaper and Japanese Association of University Physical Education and Sports conducted a survey in 92 universities regarding special support for student athletes. The results

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