



Original article

Association between the entrance examination score / academic performance and results of Occupational Therapist National Examination –Based on a survey by the Department of Occupational Therapy, Faculty of Rehabilitation, Kobe Gakuin University–

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Abstract

Recently, the role of occupational therapists has increased with diversification of medical/nursing care fields. However, the pass rate for Occupational Therapist National Examination ranges from 70 to <90%. A previous study showed that academic performance after entrance into a physical therapist training school was associated with the national examination score/success or failure. On the other hand, few studies have reported the association between the entrance examination score/academic performance at occupational therapist training schools and results of the national examination.

The purpose of this study was to clarify the association between the entrance examination score/academic performance and results of Occupational Therapist National Examination in students belonging to the Department of Occupational Therapy and identify the performance characteristics of students who fail the national examination.

Of 172 students who entered the Department of Occupational Therapy, Faculty of Rehabilitation, Kobe Gakuin University, between 2015 and 2018, the participants were 106 who graduated without repeating the same year. They were divided into two groups: success and failure groups (n = 96 and 10, respectively) based on the results of the national examination. The participants had received the same entrance examination system and curriculum.

There were no significant differences in the man-to-woman ratio, entrance examination category, or entrance examination score between the two groups. In 10 of the 70 specialized required participants taken after entrance, the grade points in the failure group were significantly lower than in the success group. With respect to semesters, the grade points in the 2nd, 3rd, 5th, and 6th semesters in the failure group were significantly lower than in the success group.

Academic performance early after entrance was associated with the results of Occupational Therapist National Examination, suggesting the importance of learning specialized required subjects early after entrance.

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Introduction

The Japanese population has decreased, and the rapid aging of society has become marked with a decrease in the number of births. The Government of Japan predicted that the number of births would decrease from 840,000/year in 2020 to 480,000/year in 2060, and that persons aged ≥ 75 years would account for 1/3 of the population in 2035¹⁾.

With a change in the disease structure related to an increase in the number of elderly persons with a high morbidity rate of chronic disease, the needs for medical practice have changed to the necessity of maintaining/improving the quality of life while coexisting with a disease in addition to the cure of disease²⁾. Furthermore, the needs for nursing prevention and welfare fields have increased with the change in the needs for medical practice.

The World Health Organization (WHO) divided medicine into 4 phases, and defined that therapeutic medicine corresponded to the 3rd phase, and that rehabilitation medicine corresponded to the 4th phase. In rehabilitation medicine, residual disorders are accurately evaluated, and integrated services are provided based on the Long-Term Care Insurance Act and Act for the Welfare of Persons with Physical Disabilities in addition to the Medical Care Act, aiming at rearrangement of individuals' own lives³⁾.

For rehabilitation medicine, multidisciplinary relation-based team practice by physicians, occupational/physical therapists, and nurses is necessary⁴⁾. The role of occupational therapists in rehabilitation medicine is to ameliorate/relieve subjects' psychophysical dysfunction and support/improve self-care/work/learning/leisure activities necessary for living independently⁵⁾. Due to so many roles, occupational therapists must acquire specialized knowledge on support for nursing prevention, working, welfare equipment, living at home, and dementia⁶⁾.

Recently, role expectations for occupational therapists have been increasing with the rapid aging of society, expansion of target diseases, and diversification of support activities for hospitals, nursing facilities, and health/educational institutions as an occupational field and community-based integrated care systems⁶⁾. The pass rate for Occupational Therapist National Examination ranges from 70 to $< 90\%$ ⁷⁾. The nation (Ministry of Health, Labour and Welfare) may require undergraduate education

students to acquire knowledge and skills meeting medical needs developing day by day. Imura et al. reported that enrolled students had become highly diversified with a decrease in the number of children and an increase in the higher education institution entrance rate. In addition, they indicated a decline in enrolled students' academic performance and the possibility that the number of students who cannot complete the training course may increase⁸⁾.

Previous studies reported that academic performance after entrance into a physical therapist training school was associated with the national examination score/success or failure⁹⁾¹⁰⁾. According to a survey conducted by the Ministry of Health, Labour and Welfare, the amount of physical therapists' knowledge/level of their skills to be required in clinical practice have been increasing, and a 4-year period is necessary for physical therapist training, not a 3-year period¹¹⁾.

On the other hand, few studies have reported the association between the entrance examination score/academic performance at occupational therapist training schools and results of the national examination.

The purpose of this study was to clarify the association between the entrance examination score/academic performance and results of Occupational Therapist National Examination in students belonging to the Department of Occupational Therapy in our university and identify the performance characteristics of students who fail the national examination as early as possible after entrance.

Methods

Among a total of 172 students admitted to the Department of Occupational Therapy, Faculty of Rehabilitation, Kobe Gakuin University (our university), in 2015, 2016, 2017, and 2018, the subjects were 106 who graduated without repeating the same year. They were divided into two groups: success and failure groups ($n = 96$ and 10 , respectively) based on the results of the national examination. The same entrance examination system and education curriculum were used between 2015 and 2018.

As information on the entrance examination in the 106 participants, we collected the following data through the Entrance Examination Center according to the given procedure: the type of entrance examination (entrance examination based on public recommendation, special



entrance examination for Kobe Gakuin University Senior High School, entrance examination based on a recommendation for designated schools, general entrance examination, and entrance examination by the National Center for University Entrance Examinations); rating score (full score: 5) at senior high school; score for English as the first written test, elective subject selected (from Japanese, Mathematics, and Science) as the second written test, and score for this subject in the entrance examination; and gender. The score of each written test was converted to a deviation value. It should be noted that among these types of entrance examination, the special entrance examination for Kobe Gakuin University Senior High School and entrance examination based on recommendation for designated schools include an interview, but no written test. Furthermore, as information about the 106 students after entrance into the university, we collected the names of the subjects they took and their grades for these subjects through the Educational Affairs Center, following the given procedure.

As information regarding the students' subsequent academic performance, their grades, S, A, B, C, D, and "/", for each subject taken were scored 4, 3, 2, 1, 0, and 0, respectively, as grade points. Among the subjects taken by the students, we investigated the grade points for specialized required subjects. Next, we calculated the grade point average estimated with required subjects (GPA-RS) from grade points for specialized required subjects using the following formula: $\text{GPA-RS} = (\sum \text{grade points for specialized required subjects} \times \text{number of credits}) / (\sum \text{number of credits from specialized}$

required subjects)¹²⁾. We compared the GPA-RS in each of semesters 1-8 between the two (success and failure) groups. In semesters with significant differences in the GPA-RS between the two groups, we calculated the area under the curve (AUC), cut-off value, sensitivity, and specificity from the receiver operating characteristic (ROC) curve.

For statistical analysis, we examined continuous variables using the Shapiro-Wilk test to confirm data normality. When the data were normal, isovariance was tested using Levene's test. When variance was equal, the unpaired t-test was used. When it was not equal, Welch's t-test was performed. When the Shapiro-Wilk test did not confirm data normality, we used the Mann-Whitney U test. As a nominal variable, χ^2 was used. A p-value of 0.05 was regarded as significant. We used the statistical software IBM SPSS Statistics Ver. 28.

As for the explanation for participants and their consent, we first obtained approval for the following points from the Ethics Committee for Research Involving Humans at the Faculty of Rehabilitation, Kobe Gakuin University (approval number: SORIN 20-16), and then shared this information on the website of the university: 1) the purpose and method of information use, 2) details of the information used, 3) scope of persons who use the information, 4) the name, institution, and contact address of the principal investigator, 5) term of information use, 6) disuse of information that allows the identification of subjects, and 7) the method to manage requests/claims from the subjects specified in 6) or their representatives.

Table 1. Comparison by type of entrance examination, by rating score, by written test score, and by elective subject

Type of entrance examination	success groups	failure groups	p-value
Entrance examination based on recommendation for designated schools	26	3	0.68
Entrance examination based on public recommendation	51	6	
Special entrance examination for Kobe Gakuin University Senior High School	4	1	
General entrance examination	14	0	
Entrance examination by the National Center for University Entrance Examinations	1	0	
※Values are students number			
Gender, rating score, written test score, elective subject	success groups	failure groups	p-value
Gender (man : woman)	24:41	3:3	0.53
Rating score	3.91 ± 0.46 (n=96)	3.76 ± 0.50 (n=10)	0.81
First written test (English)	53.6 ± 7.49 (n=65)	48.4 ± 11.2 (n=6)	0.12
Second written test	53.1 ± 7.58 (n=64)	56.4 ± 6.08 (n=5)	0.79
Elective subject of Second written test (Japanese, Mathematics or Science)	Japanese (n=37)	Japanese (n=2)	0.27
	Mathematics or Science (n=28)	Mathematics or Science (n=4)	

※Values are expressed as mean ± SD,



Table 2. Comparison of Grade Points for Specialized Required Subjects

semester	Subjects (the number of credits)	success groups	failure groups	p-value	effect size(r)
1	Introduction to Occupational Therapy Exercise (1)	3(3-3) (n=96)	3(2-3) (n=10)	<0.01	0.26
	Psychology (2)	2(1-2) (n=96)	2(2-3) (n=10)	0.30	-0.10
	Exercise in Physics of Body Movement I (1)	1(1-1) (n=96)	1(1-1) (n=10)	0.09	0.16
	Anatomy I (2)	2(1-3) (n=96)	2(1-2) (n=10)	0.44	0.08
	Comprehensive Rehabilitation (2)	3(3-3) (n=96)	3(3-3) (n=10)	0.28	0.11
	Occupational activity studies (1)	3(2-3) (n=96)	2(2-2) (n=10)	0.22	0.12
	Practice of occupational activity studies I (2)	3(3-3) (n=96)	3(3-3) (n=10)	0.96	0.01
	Practice of occupational activity studies II (1)	4(3-4) (n=96)	3(2-4) (n=10)	0.09	0.17
2	Observation practice of occupational therapy (1)	3(3-4) (n=96)	3(3-4) (n=10)	0.45	-0.07
	Anatomy II (2)	2(1-3) (n=96)	1(1-1) (n=10)	<0.05	0.24
	Anatomy practice (2)	2(2-3) (n=96)	2(1-2) (n=10)	<0.05	0.21
	Physiology (2)	2(1-3) (n=96)	1(1-2) (n=28)	0.05	0.19
	Human Development (2)	2(2-3) (n=96)	2(2-3) (n=10)	0.41	0.08
	Kinesiology (2)	3(2-3) (n=96)	2(1-3) (n=10)	0.06	0.18
	Clinical psychology (1)	2(2-3) (n=96)	2(2-3) (n=10)	0.21	0.12
	Human rights and medical care (1)	2(1-3) (n=96)	1.5(1-3) (n=10)	0.16	0.14
3	Practice of occupational activity studies III (1)	2(2-3) (n=96)	1.5(2-3) (n=10)	0.27	0.11
	Public health (1)	3(2-3) (n=96)	3(2-3) (n=10)	0.12	0.15
	Physiology practice (2)	3(2-3) (n=96)	2(2-3) (n=10)	0.45	0.07
	Practice of Occupational Therapy Kinesiology (1)	3(2-3) (n=96)	2(1-3) (n=10)	<0.05	0.23
	Internal Medicine I (1)	2(1-3) (n=96)	1.5(1-2) (n=10)	0.29	0.10
	Orthopedic Surgery I (1)	1(1-2) (n=96)	1(1-1) (n=10)	0.10	0.16
	General theory of Psychiatry (2)	3(2-3) (n=96)	2(2-3) (n=10)	0.05	0.19
	Developmental Disabilities (2)	3(2-3) (n=96)	2.5(2-3) (n=10)	0.33	0.09
4	Pathology (2)	2(1-3) (n=96)	2(1-3) (n=10)	0.54	0.06
	Occupation and Science (1)	3(2-3) (n=96)	2.5(2-3) (n=10)	0.32	0.10
	Physical disability assessment (1)	3(2-3) (n=96)	2(1-3) (n=10)	0.20	0.12
	Mental disorder assessment (1)	2(2-3) (n=96)	2(1-3) (n=10)	0.17	0.13
	Developmental Disabilities Assessment (1)	3(2-3) (n=96)	2(2-3) (n=10)	0.12	0.15
	Activities of Daily Living (1)	2(1-3) (n=96)	1.5(1-3) (n=10)	0.53	0.06
	Internal Medicine II (1)	2(1-2) (n=96)	1(1-1) (n=10)	<0.01	0.31
	Orthopedic Surgery II (1)	1.5(1-2) (n=96)	1(1-1) (n=10)	<0.05	0.23
5	Mental Disorders I (1)	3(2-3) (n=96)	2(1-3) (n=10)	0.18	0.13
	Mental Disorders II (1)	3(2-4) (n=96)	3(1-4) (n=10)	0.94	-0.01
	Clinical neurology I (1)	2(2-3) (n=96)	2(1-3) (n=10)	0.32	0.10
	Clinical neurology II (1)	3(2-4) (n=96)	2.5(2-4) (n=10)	1.00	0.00
	Basic Theory of Occupational Therapy (1)	3(2-3) (n=96)	3(1-3) (n=10)	0.85	0.02
	Exercise in Physical Disability Evaluation (1)	3(2-4) (n=96)	2(2-3) (n=10)	<0.01	0.27
	Exercise in Mental Disability Evaluation (1)	3(2-3) (n=96)	2.5(2-3) (n=10)	0.92	0.01
	Exercise in Developmental Disabilities Evaluation (1)	3(2-3) (n=96)	2(2-3) (n=10)	0.31	0.10
6	Practice in Activities of Daily Living I (1)	3(2-3) (n=96)	2(1-3) (n=10)	0.20	0.12
	Occupational therapy clinical practice I (2)	3(3-4) (n=96)	4(3-4) (n=10)	0.48	-0.07
	Rehabilitation Medicine (2)	2(1-4) (n=96)	1(1-1) (n=10)	<0.05	0.22
	Medical Safety Management Theory (1)	4(3-4) (n=96)	4(3-4) (n=10)	0.86	-0.02
	Occupational Therapy Research I (2)	3(3-3) (n=96)	3(3-3) (n=10)	1.00	0.00
	Comprehensive training in occupational therapy evaluation (1)	3(2-3) (n=96)	2.5(2-3) (n=10)	0.69	0.04
	Practice in Activities of Daily Living II (1)	2(2-3) (n=96)	2(1-2) (n=10)	0.19	0.13
	Technical Theory of Welfare Appliance Support (1)	3(3-4) (n=96)	4(3-4) (n=10)	0.09	-0.16
7	Physical Disability Therapy I (1)	3(2-3) (n=96)	2(1-3) (n=10)	0.05	0.19
	Physical Disability Therapy II (1)	3(2-3) (n=96)	1.5(1-2) (n=10)	<0.01	0.25
	Psychiatric Disorder Therapy (1)	3(2-3) (n=96)	2(2-2) (n=10)	0.05	0.19
	Developmental Disorders Therapy (1)	2(1-3) (n=96)	1(1-2) (n=10)	0.18	0.13
	Therapy for geriatric disorders (1)	3(2-3) (n=96)	2(2-3) (n=10)	0.28	0.10
	Prosthetics and Orthosis (1)	2(1-3) (n=96)	1.5(1-2) (n=10)	0.01	0.16
	Practice of Prosthetics and Orthosis(1)	3(2-3) (n=96)	2(2-3) (n=10)	0.07	0.18
	Regional Occupational Therapy (1)	3(2-3) (n=96)	2.5(1-3) (n=10)	0.10	0.16
8	Occupational Therapy Reserch II (2)	3(3-3) (n=96)	3(3-3) (n=10)	0.57	0.06
	Practice of clinical skills in occupational therapy (2)	2(2-3) (n=96)	2(2-2) (n=10)	0.33	0.09
	Practice on Welfare Appliance Support Techniques (1)	3(2-3) (n=96)	2(2-3) (n=10)	0.06	0.19
	Theory of career and life support (1)	3(2-4) (n=96)	3(2-3) (n=10)	0.19	0.13
	Practice of physical disability therapy (1)	3(2-3) (n=96)	2(1-3) (n=10)	0.23	0.12
	Practice of mental disability therapy (1)	3(2-3) (n=96)	2.5(2-3) (n=10)	0.37	0.09
	Practice of developmental disability therapy (1)	1(1-2) (n=96)	1(1-1) (n=10)	0.30	0.10
	Practice of geriatric disability therapy (1)	3(2-3) (n=96)	3(3-3) (n=10)	0.26	-0.11
9	Practice of Regional Occupational Therapy (2)	3(3-4) (n=96)	3(3-3) (n=10)	0.68	0.04
	Clinical practice of occupational therapy II a (9)	3(2-3) (n=96)	3(2-3) (n=10)	0.33	0.10
	Clinical practice of occupational therapy II b (9)	3(2-3) (n=96)	2.5(2-3) (n=10)	0.55	0.06
10	Medical and welfare cooperation (1)	3(3-4) (n=96)	3.5(3-4) (n=10)	0.48	-0.07
	Manegement of Occupational Therapy (1)	2(1-4) (n=96)	2.5(2-4) (n=10)	0.45	-0.07
	Comprehensive Exercise in Occupational Therapy (1)	3(2-3) (n=96)	1(1-2) (n=10)	<0.01	0.30

Values are expressed as median (interquartile range), Figures in parentheses are number of credits.Statistical test:Mann-Whitney U test

Results

There were no significant differences in the gender or type of entrance examination between the two groups (Table 1).

There were no significant differences in the rating score at senior high school, score for English as the first written test, elective subject selected (from Japanese, Mathematics, and Science) as the second written test, or score for this subject in the entrance examination between the two groups (Table 1).

Concerning grade points for specialized required subjects taken after entrance, those for 10 of 70 specialized required subjects in the failure group were significantly lower than in the success group (Table 2).

With respect to the GPA-RS in each semester, the values in semesters 2, 3, 5, and 6 in the failure group were significantly lower than in the success group (Table 3).

In semesters with significant differences in the GPA-RS between the two groups, we calculated the AUC and cut-off value from ROC analysis using the success group as a state variable. These values in semester 2 were 0.78 and 2.25 points, respectively. Those in semester 3 were 0.72 and 2.34 points, respectively. Those in semester 5 were 0.76 and 2.50 points, respectively. Those in semester 6 were 0.72 and 2.63 points, respectively (Table 4).

Discussion

Of the 172 students admitted to the Department of Occupational Therapy, Faculty of Rehabilitation, Kobe Gakuin University, in 2015, 2016, 2017, and 2018, 106 graduated without repeating the same year, accounting for 61.6%.

According to a survey conducted by the Ministry of Health, Labour and Welfare, the 4-year university graduation rate for students belonging to the Department of Occupational Therapy is 72.4%¹¹⁾. The graduation rate from the Department of Occupational Therapy in our university was slightly lower than the above value. In our university, there are a large number of students who entered the Department of Occupational Therapy through recommendation-based entrance examinations, including special entrance examination. Yanagisawa et al. suggested that factors other than academic ability, such as a will to continue learning and a motivation to obtain a national qualification, in students who entered a university based on recommendations are reduced in comparison with students who entered a university through general entrance examination¹⁰⁾. In addition, Senba et al. reported that students belonging to medical departments were exposed to higher-intensity stress in comparison with those belonging to other departments due to the large number of credits to be acquired after entrance, long class

Table 3. Comparison of GPA for required subjects by semester

semester	success groups	failure groups	p-value	effect size (r)	statistical test
1	2.50 (2.29-2.72) (n=96)	2.32 (2.09-2.55) (n=10)	0.09	0.17	unpaired t-test
2	2.43 (2.00-2.86) (n=96)	1.96 (1.73-2.19) (n=10)	<0.05	0.45	Welch's t test
3	2.44 (2.07-2.80) (n=96)	2.09 (1.96-2.21) (n=10)	<0.05	0.35	Welch's t test
4	2.54 (2.16-2.91) (n=96)	2.35 (1.95-2.74) (n=10)	0.67	0.18	unpaired t-test
5	2.60 (2.28-2.93) (n=96)	2.20 (1.93-2.48) (n=10)	<0.01	0.27	unpaired t-test
6	2.67 (2.50-2.83) (n=96)	2.54 (2.40-2.68) (n=10)	<0.05	0.20	unpaired t-test
7	3.00 (2.75-3.25) (n=96)	2.50 (2.00-3.00) (n=10)	0.33	0.10	Mann-Whitney U test
8	2.67 (2.17-3.17) (n=96)	2.50 (1.96-3.04) (n=10)	0.25	0.11	Mann-Whitney U test

Values are expressed as median (interquartile range)

Table 4. ROC analysis result

semester	AUC	cut off point	sensitivity	specificity
2	0.78	2.25	0.60	1.00
3	0.72	2.34	0.57	0.90
5	0.76	2.50	0.56	0.90
6	0.72	2.63	0.61	0.80

※ROC : Receiver Operating Characteristic curve

※AUC : Area Under Curve



hours, and high ethical standards required from the time of entrance in consideration with their necessity in clinical practice¹³⁾. In daily learning in the Department of Occupational Therapy, involving the acquisition of much specialized knowledge and high ethical standards, university students may feel a gap between issues to be reached and their own motivations on entrance and select dropout.

There was no influence of the gender difference, type of entrance examination, rating score at senior high school, or entrance examination on the results of the national examination for occupational therapists. A study found a gender difference in academic performance, whereas Novalis et al. reported that various confounders influenced the interpretation of the relationship between the gender difference and academic performance, suggesting the necessity of further investigation¹⁴⁾¹⁵⁾. Therefore, concerning the relationship between the gender difference and results of the national examination in this study, we consider that there is no marked influence based on the survey results. Neither the rating score before entrance nor entrance examination score influenced the results of the national examination. Previously, Yanagisawa and Novail et al. also reported that the rating score before entrance was not associated with the results of the national examination for occupational therapists. Similarly, this study showed that academic performance before entrance into the university did not influence the results of the national examination for occupational therapists. We consider that the entrance examination system of the Department of Occupational Therapy in our university has facilitated the selection of students with equivalent academic abilities.

With respect to the association between academic performance after entrance and the results of the national examination for occupational therapists, the GPA-RS in semester 2, early after entrance, in the failure group was significantly lower than in the success group. A previous study conducted by the Department of Physical Therapy in our university also showed a positive correlation between the GPA-RS in semester 3 or later and score on the national examination for physical therapists¹²⁾. Furthermore, Takekata and Nakajima et al. reported that first-year grades influenced the subsequent on-campus academic performance and results of the national examination¹⁶⁾¹⁷⁾. This study also indicated that academic performance early after entrance influenced the results of

the national examination for occupational therapists. Furthermore, Kitamura et al. reported the necessity of continuously learning basic specialized knowledge early after entrance¹⁸⁾. This study also showed that academic performance early after entrance was associated with the results of the national examination for occupational therapists, suggesting the importance of learning specialized required subjects early after entrance.

When investigating the grade points for specialized required subjects and GPA-RS in each semester, the number of specialized required subjects with significant differences in grade points between the success and failure groups was small, but there was a significant difference in the GPA-RS. This was possibly because the GPA-RS was calculated from specialized required subjects for which grade points in the failure group were lower than in the success group, although there were no significant differences in grade points for respective specialized required subjects between the two groups. Amy L. Kurowski-Burt et al. also reported the association between the GPA during enrollment in the Department of Occupational Therapy and results of the national examination for occupational therapists¹⁹⁾.

ROC analysis was conducted with respect to semesters with significant differences in the GPA-RS between the two groups. The AUCs in semesters 2, 3, 5, and 6 were ≥ 0.7 , and cut-off values ranged from 2.25 to 2.63 points. Amy L. Kurowski-Burt et al. reported first- and second-year GPAs of ≤ 2.5 and ≤ 3.8 points, respectively, as references¹⁹⁾. According to Anthony K. Akobeng, the accuracy was high at an area under the ROC curve of ≥ 0.9 , moderate at a value of 0.7 to 0.9, and low at a value of 0.5 to 0.7²⁰⁾. In the Department of Occupational Therapy in our university, it was shown that students who pass or fail Occupational Therapist National Examination could be identified with moderate accuracy relatively early after entrance, that is, from semester 2, using the GPA-RS in each semester. Therefore, in the Department of Occupational Therapy in our university, students at risk of failure in Occupational Therapist National Examination should be extracted based on the cut-off value of GPA-RS obtained in this study in the early phase of the second year, when semester 3 starts, after the completion of semester 2, and individual guidance or learning counseling by department teachers should be performed. These strategies may improve students'

academic performance, contributing to the successful results of the national examination. Kitamura et al. also suggested the efficacy of reviewing lessons for students whose GPA-RS does not reach the cut-off value¹⁸⁾.

In this study, data from students with repeating the same year were not included, and only students belonging to the Department of Occupational Therapy, Faculty of Rehabilitation, Kobe Gakuin University, were investigated. As the limitations of this study, data analysis involving the academic performance of students with repeating the same year is necessary, and the cut-off value obtained in this study cannot be generalized to other training schools.

Conflict of Interest

The authors declare no conflict of interest.

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