

# Association of the ACTN3 and ACE Polymorphisms in Japanese judo athletes



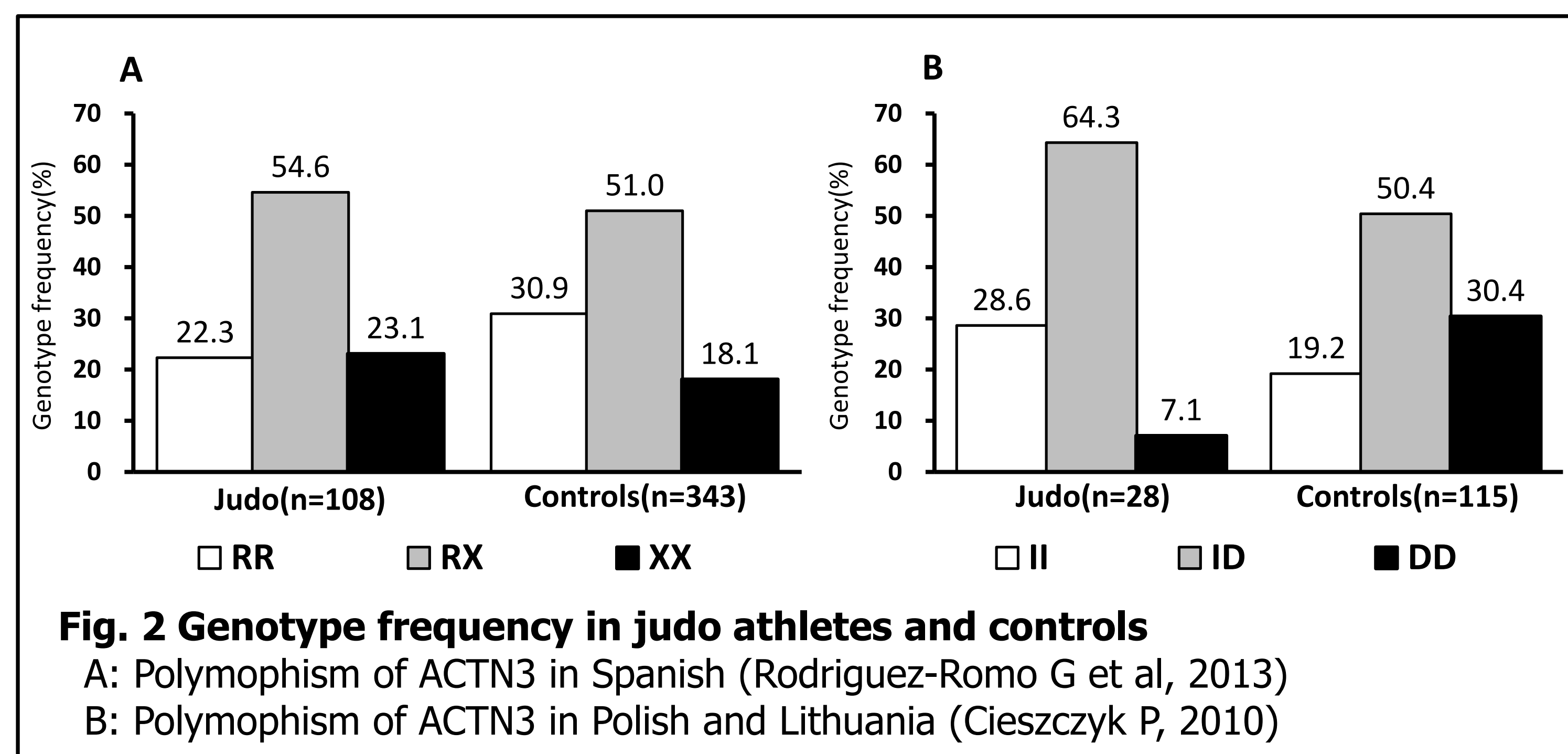
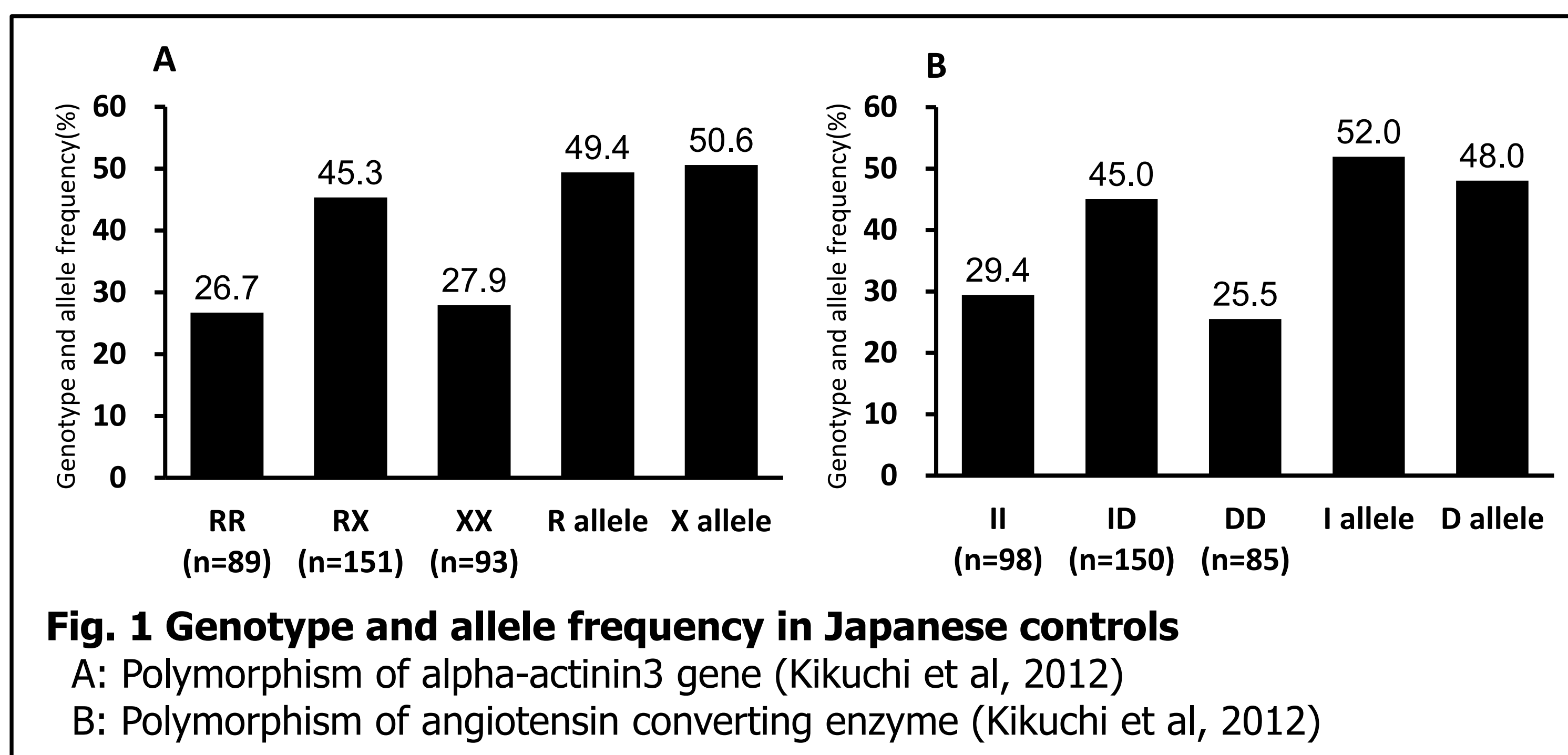
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## Introduction

Many previous studies have reported positive associations between genetic polymorphisms and athletic performance. The alpha-actinin 3 (ACTN3) R/X and angiotensin-converting enzyme (ACE) I/D genotypes have been suggested to influence variations in skeletal muscle function. This study aimed to investigate whether polymorphisms in ACTN3 and ACE are associated with the athletic status of Japanese judo athletes.



## Methods

### Subjects

- All subjects belonging to Japan top-level university
- Including 9 S-rank (top-level of international tournaments) player

Table 1. Subject characteristic

Weight class	n
Total	121
Light class(60kg, 66kg)	32
Middle class(73kg, 81kg, 90kg)	52
Heavy class(100kg, 100kg+)	37



### Genotype

- DNA was extracted from their saliva (QIAamp DNA MiniKit)
- Using PCR-RFLP(DdeI) or PCR method

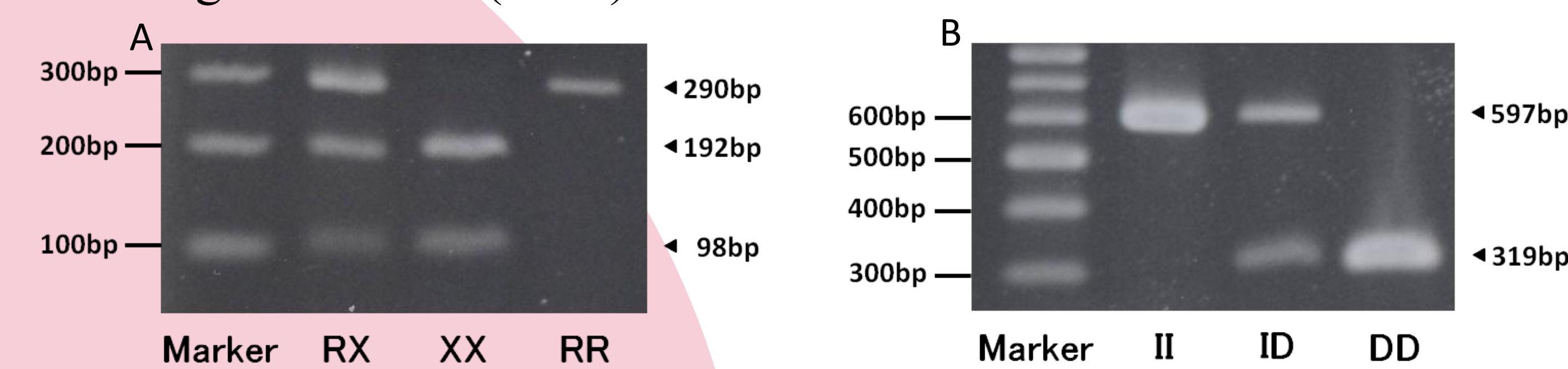


Fig. 3 Detection of genotype(A: ACTN3 gene, B: ACE gene)

## Results

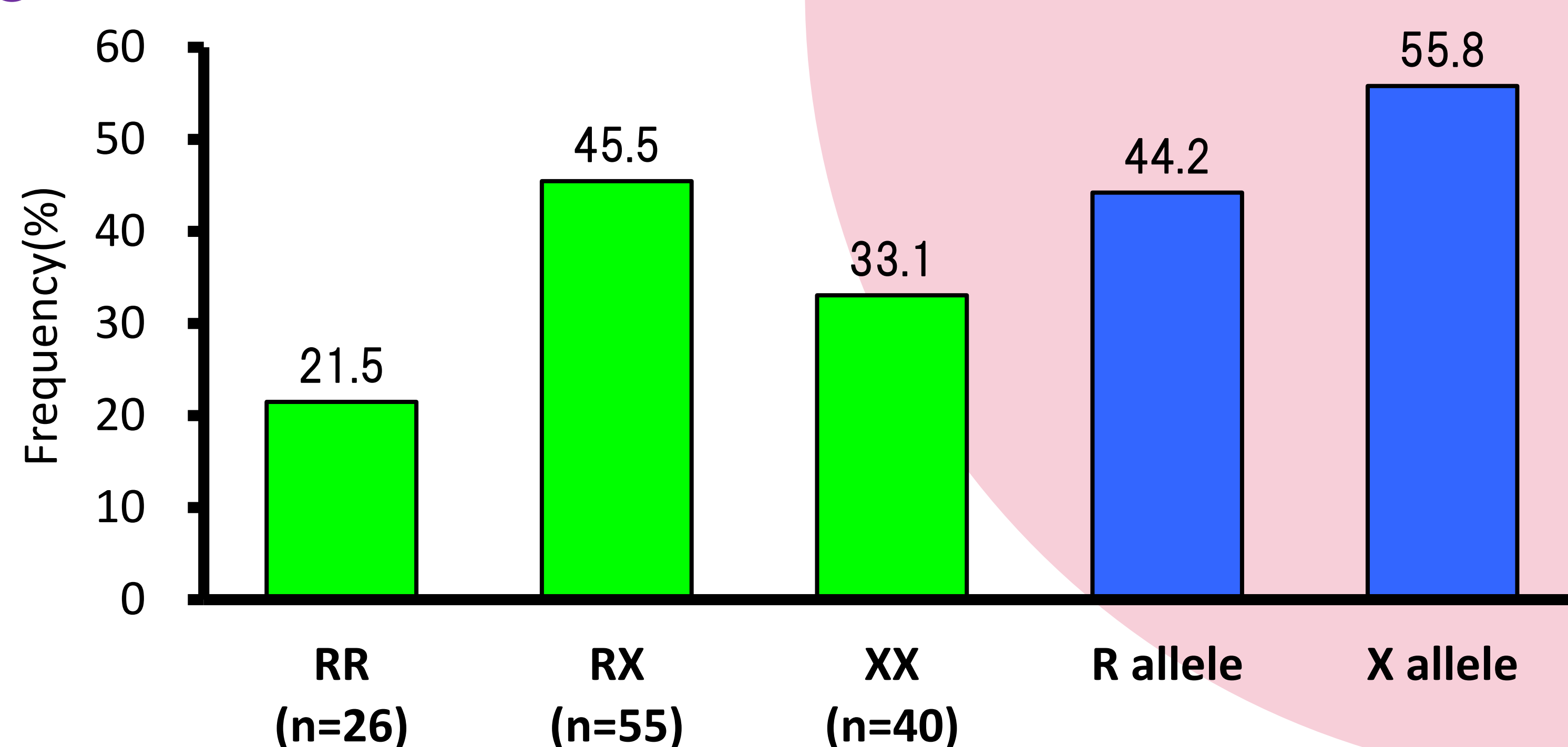


Fig. 4 Genotype and allele frequency of ACTN3 polymorphism

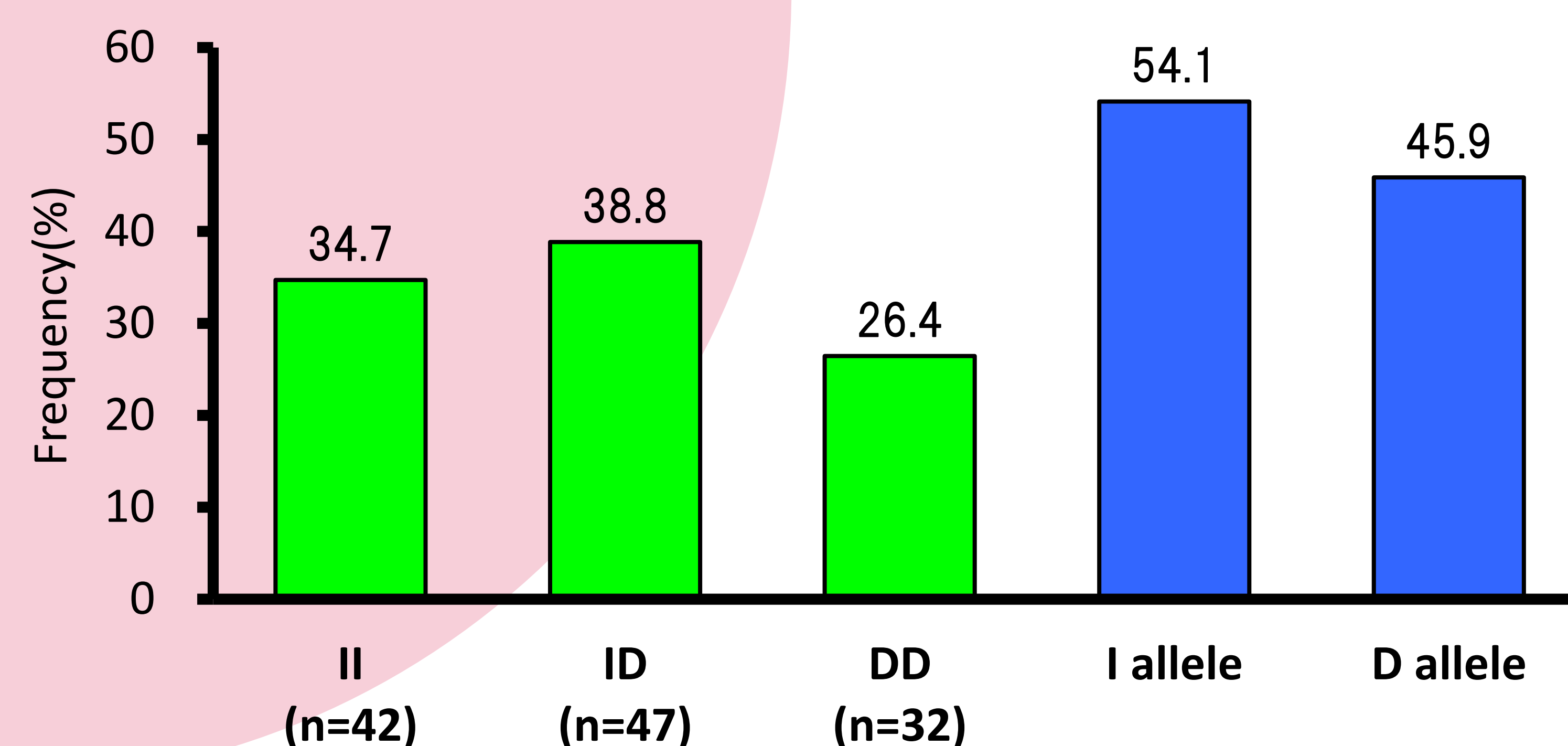


Fig. 5 Genotype and allele frequency of ACE polymorphism

Table 2. Frequency of ACTN3 genotype

Rank	RR	RX	XX
S-rank player (n=9)	1 (11.1%)	7 (77.8%)	1 (11.1%)
The others (n=112)	25 (22.3%)	48 (42.9%)	39 (34.8%)

Figure4 indicate genotype and allele frequency of ACTN3 polymorphism in all judo player.

Table2 show that many international top-level athletes possessed both R and X alleles.

Table 3. Frequency of ACE genotype

Rank	II	ID	DD
S-rank player (n=9)	4 (44.4%)	1 (11.1%)	4 (44.4%)
The others (n=112)	38 (33.9%)	46 (41.1%)	28 (25.0%)

Figure5 indicate genotype and allele frequency of ACE polymorphism in all judo player.

Table3 show that international athletes were homozygous for I or D allele.

## Conclusion

Our data suggest that the polymorphisms of ACTN3 and/or ACE genes may be associated with the athletic status of Japanese judo athletes.

## Acknowledgement

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