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## No Association of ACTN3 and ACE Genotypes with Strength Qualities in Indian Boxers

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### INTRODUCTION:

Boxing is a weight restricted sport. Relative strength is one of the key indicators of boxing performance. The force generated by both the upper and lower limbs is important for punching force (Chaabène et al., 2014). The strength qualities of an individual is determined largely by genetic factors (heritability estimates for power-related phenotypes ranges from approximately 49% to 86%; Ahmetov et al., 2022). ACTN3 R577X and ACE I/D gene polymorphisms are the most studied gene polymorphisms for the association of strength qualities with contradictory findings across different populations (Ahmetov et al., 2022).

The aim of this study was to investigate the differences in strength qualities among Indian boxers based on their ACE I/D and ACTN3 R577X gene polymorphisms.

### METHODS:

For the purpose of this study, 39 elite Indian boxers were recruited and 2-3 ml saliva sample from participants was used for DNA isolation. PCR-RFLP method was used to observe the gene polymorphisms. The strength qualities of the boxers were measured at National Coaching Camp, Patiala. Maximal strength of the upper body and lower body was measured with 1RM strength test (bench press and back squat, respectively). Lower body upward power was assessed by countermovement jump test. Maximum static strength of both hands was assessed by maximal handgrip strength test. One way ANOVA test was used (after testing assumptions) to analyze the differences in strength qualities of the Boxers.

### RESULTS:

Elite Indian boxers had relative strength of 1.28 ( $\pm$  0.09) in their lower body and 1.11 ( $\pm$  0.04) in their upper body. The participants performed countermovement jump with a height of 48.13 cm ( $\pm$  3.36). The maximum static strength of their left and right hands was 48.70 kg ( $\pm$  3.30) and 49.94 kg ( $\pm$  2.68), respectively. After categorizing Indian boxers based on their genotypes, we observed no significant differences ( $p > 0.05$ ) in their relative strength (upper and lower body), lower body power, and maximum static strength of both hands.

### CONCLUSION:

On the basis of the findings of this study, we infer that the ACTN3 R577X and ACE I/D gene polymorphisms do not differentiate Indian boxers for their strength qualities.

### References:-

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