

**PENGARUH POLIMORFISME GEN ACTN3 TERHADAP PERUBAHAN
KECEPATAN LARI PASCA INTERVENSI
*PLYOMETRIC TRAINING***

**Studi pada Mahasiswa Unit Kegiatan Mahasiswa (UKM) Olahraga
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ABSTRAK

Latar belakang : Kecepatan lari merupakan suatu komponen biomotorik yang berperan dominan dalam performa atlet. Gen ACTN3 berfungsi untuk mengkode produksi dari protein α -actinin-3. Varian polimorfisme gen ACTN3 dipercayai mampu mempengaruhi performa individu. *Plyometric training* (PT) merupakan bentuk metode latihan fisik yang diduga mampu meningkatkan kemampuan fisik. meskipun pengaruhnya dengan polimorfisme gen ACTN3 belum banyak diteliti.

Tujuan : Penelitian ini bertujuan untuk mengetahui pengaruh polimorfisme gen ACTN3 terhadap perubahan kecepatan lari pasca intervensi *plyometric training*.

Metode : Penelitian ini menggunakan metode kuasi eksperimental dengan *pre test* dan *post test design* tanpa kontrol. Sebanyak 18 orang laki-laki dipilih dengan metode *consecutive sampling*. Subjek dikelompokkan berdasarkan polimorfisme gen ACTN3 menjalani tahapan penelitian berupa pengukuran kecepatan lari sebelum PT dan setelah PT. Responden mengikuti latihan PT selama 5 minggu dengan 2 sesi setiap minggunya. Pengukuran dilakukan pada lintasan lari 30 meter. Analisa data menggunakan metode *One Way ANOVA*.

Hasil : Perubahan kecepatan lari menunjukkan perbedaan yang signifikan pada tiap kelompok ($p < 0,05$) dengan perubahan rerata terbesar pada kelompok RR yaitu $0,53 \text{ m/s}^{-1}$.

Kesimpulan : Polimorfisme gen ACTN3 berpengaruh terhadap perubahan kecepatan lari pasca intervensi *plyometric training* pada mahasiswa UKM olahraga Fakultas Kedokteran Universitas Jenderal Soedirman.

Kata Kunci: Polimorfisme Gen ACNT3, Kecepatan lari, *Plyometric Training*.

**EFFECT OF ACTN3 GENE POLYMORPHISM ON SPRINT CHANGES
AFTER PLYOMETRIC TRAINING INTERVENTION**
**Study on Student of Sport Activity Unit (SAU) of Medical Faculty Jenderal
Soedirman University**

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Abstract

Background : Sprint is the biomotoric components that play dominantly in the performance of athletes. The ACTN3 gene works to encode the production of α -actinin-3 proteins. The ACTN3 gene polymorphism variant is believed to be able to influence individual performance. Plyometric training (PT) is a form of physical training method that can improve physical abilities. Although its influence with the ACTN3 gene polymorphism has not been widely studied.

Objective : This study was done to understand the effect of gene polymorphism ACTN3 on sprint changes after plyometric training.

Method : This study used a quasi-experimental method with village-level pre-test and post-test without control. A total of 18 men were selected by consecutive sampling method. Subjects were grouped based on the ACTN3 gene polymorphism and underwent the stages of research, namely the measurement of running speed before PT and after PT. Respondents attended PT training for 5 weeks with 2 sessions each week. Measurements are made on a 30-meter running track. Data will be analyzed using the One Way ANOVA method.

Result : There was a significant difference of sprint performance changes mean on each group ($p < 0.05$) where the biggest changes mean happened in the RR group which was 0.53 m/s^{-1} .

Conclusion : ACTN3 gene polymorphism influence sprint changes on student of sport activity unit of Jenderal Soedirman University after completed plyometric training.

Key words : ACTN3 Gene Polymorphism, Sprint, Plyometric Training.