

# The PureGenomics® Fitness & Athletic Training Optimization Protocol<sup>‡</sup>

Developed with Penny Kendall-Reed, N.D.<sup>+</sup>

EXERCISE TYPE	Gene	SNP	Alleles	What it means	Diet & Lifestyle Recommendations	Pure Encapsulations® Products <sup>‡</sup>
	<b>ACTN3</b>	rs1815739	TT (+/+) TC (+/-) CC (-/-)	Individuals with the C allele have a genetic advantage in strength and power-oriented sports that require sprinting or short, intense bursts of activity. The endurance-oriented TT genotype is linked to greater muscle soreness following these types of activities.	TT (+/+) <ul style="list-style-type: none"> <li>You are likely to perform best in endurance-oriented sports. If you choose to engage in strength/power sports, you may need to train more consistently to achieve a high level of performance. Since you are more likely to experience muscle soreness and/or higher cortisol following intense exercise, it is important to ensure adequate rest and recovery between workouts. Managing daily stress and getting adequate sleep will help to maintain healthy cortisol levels.</li> </ul> CC (-/-) <ul style="list-style-type: none"> <li>You are likely to perform best in strength, power and sprint-type sports. If you choose to participate in endurance events, you may need to train more consistently to achieve a high level of performance.</li> </ul>	TT (+/+) <ul style="list-style-type: none"> <li>Systemic Enzyme Complex, L-Glutamine (capsules or powder)</li> </ul> TC (+/-) or CC (-/-) <ul style="list-style-type: none"> <li>No Recommendations</li> </ul>
<b>ACE</b>	rs4343	GG (+/+) GA (+/-) AA (-/-)	The G allele provides a modest genetic advantage in sports requiring fast-twitch fibers, such as sprinting and weight lifting. Individuals with the A allele are more likely to excel in endurance-oriented sports.	GG (+/+) <ul style="list-style-type: none"> <li>You are likely to perform best in strength, power and sprint-type sports. If you choose to engage in endurance activities, you may need to train more consistently to achieve a high level of performance.</li> </ul> AA (-/-) <ul style="list-style-type: none"> <li>You are likely to perform best in endurance-oriented sports. If you choose to engage in strength/power sports, you may need to train more consistently to achieve a high level of performance.</li> </ul>	<ul style="list-style-type: none"> <li>No Recommendations</li> </ul>	

## Additional recommendations based on preferred exercise type

**For strength/power athletes:** WheyBasics, Creatine powder, BCAA capsules, Electrolyte/Energy formula, Nitric Oxide Ultra (capsules or stick packs)

**For endurance athletes:** WheyBasics, Nitric Oxide Ultra (capsules or stick packs), L-Glutamine, Electrolyte/Energy formula

INJURY RISK	Gene	SNP	Alleles	What it means	Diet & Lifestyle Recommendations	Pure Encapsulations® Products <sup>‡</sup>
	<b>COL5A1</b>	rs12722	TT (+/+) TC (+/-) CC (-/-)	The CC genotype has a protective effect on tendon and ligament resilience, while the T allele is associated with increased incidence of exercise-related tendon or ligament injury.	TT (+/+) or TC (+/-) <ul style="list-style-type: none"> <li>Warm up properly prior to exercise, particularly before plyometrics and uphill running. Include flexibility and mobility exercises for the calves and knees as part of your routine. Use proper technique to minimize unnecessary strain on your tendons and ligaments.</li> </ul> CC (-/-) <ul style="list-style-type: none"> <li>No Recommendations</li> </ul>	TT (+/+) or TC (+/-) <ul style="list-style-type: none"> <li>Ligament Restore<sup>‡</sup></li> </ul> CC (-/-) <ul style="list-style-type: none"> <li>No Recommendations</li> </ul>
<b>COL1A1</b>	rs1800012	GG (+/+) GT (+/-) TT (-/-)	The TT genotype reduces risk of sports related tendon and ligament injuries, according to a meta-analysis of six case control studies involving 2,314 Caucasian subjects.	GG (+/+) or GT (+/-) <ul style="list-style-type: none"> <li>Warm up properly prior to exercise, particularly before plyometrics and uphill running. Include flexibility and mobility exercises for the calves and knees as part of your routine. Use proper technique to minimize unnecessary strain on your tendons and ligaments.</li> </ul> TT (-/-) <ul style="list-style-type: none"> <li>No Recommendations</li> </ul>	GG (+/+) or GT (+/-) <ul style="list-style-type: none"> <li>Ligament Restore<sup>‡</sup></li> </ul> TT (-/-) <ul style="list-style-type: none"> <li>No Recommendations</li> </ul>	
<b>MMP3</b>	rs679620	GG (+/+) GA (+/-) AA (-/-)	The G allele has been shown to influence the resilience of the Achilles tendon.	GG (+/+) <ul style="list-style-type: none"> <li>Be careful with plyometrics, uphill running, or overextension of the Achilles tendon. Stretch your calf muscles and warm up and cool down properly before and after exercise sessions.</li> </ul> GA (+/-) or AA (-/-) <ul style="list-style-type: none"> <li>No Recommendations</li> </ul>	GG (+/+) <ul style="list-style-type: none"> <li>Ligament Restore<sup>‡</sup></li> </ul> GA (+/-) or AA (-/-) <ul style="list-style-type: none"> <li>No Recommendations</li> </ul>	

<sup>‡</sup>These statements have not been evaluated by the Food & Drug Administration. These products are not intended to diagnose, treat, cure or prevent any disease.

# The PureGenomics® Fitness & Athletic Training Optimization Protocol<sup>‡</sup> (Cont.)

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	Gene	SNP	Alleles	What it means	Diet & Lifestyle Recommendations	Pure Encapsulations® Products <sup>‡</sup>
EXERCISE RESPONSE	ADRB2	rs1042713	AA (+/+) AG (+/-) GG (-/-)	Individuals with the A allele (particularly the AA genotype) tend to experience greater increases in VO <sub>2</sub> max with endurance training compared to those with the GG variant. In a study of 316 marathon runners, the A allele was associated with the fastest finishing times.	AA (+/+) or AG (+/-) <ul style="list-style-type: none"> <li>You are likely to respond well to endurance training, achieving above-average VO<sub>2</sub> max improvements.</li> </ul> GG (-/-) <ul style="list-style-type: none"> <li>Typical response to endurance training; no recommendations</li> </ul>	<ul style="list-style-type: none"> <li>No Recommendations</li> </ul>
	AMPD1	rs17602729	TT (+/+) TC (+/-) CC (-/-)	The TT genotype is associated with suppressed VO <sub>2</sub> max improvements following 20 weeks of aerobic training (3 x 50 min/week at 55-75% maximal heart rate).	TT (+/+) <ul style="list-style-type: none"> <li>Reduced VO<sub>2</sub> max response to endurance training. You may need to train more diligently to achieve a high level of endurance performance.</li> </ul> TC (+/-) or CC (-/-) <ul style="list-style-type: none"> <li>No recommendations</li> </ul>	<ul style="list-style-type: none"> <li>No Recommendations</li> </ul>
	LIPC	rs1800588	TT (+/+) CT (+/-) CC (-/-)	Exercise typically improves insulin sensitivity, but individual results vary. CC and CT genotypes are likely to experience greater improvements in insulin sensitivity compared to TT carriers.	CC (-/-) or CT (+/-) <ul style="list-style-type: none"> <li>If maintaining healthy glucose homeostasis is a clinical goal, regular exercise is likely to result in significant improvements.</li> </ul> TT (+/+) <ul style="list-style-type: none"> <li>You are likely to achieve modest improvements in insulin sensitivity with exercise. If maintaining healthy glucose homeostasis is a clinical goal, consider additional strategies to support glucose homeostasis. Your healthcare practitioner may recommend a supplement.</li> </ul>	CC (-/-) or CT (+/-) <ul style="list-style-type: none"> <li>No Recommendations</li> </ul> TT (+/+) <ul style="list-style-type: none"> <li>Metabolic Xtra</li> </ul>
	LPL	rs328	GG (+/+) GC (+/-) CC (-/-)	Individuals with the GG or GC variant are likely to experience greater fat loss with endurance training compared to those with the CC variant.	GG (+/+) or GC (+/-) <ul style="list-style-type: none"> <li>You are likely to experience greater fat loss with endurance training based on this genetic marker. If fat loss is an existing goal, consider endurance training as a focus.</li> </ul> CC (-/-) <ul style="list-style-type: none"> <li>You are likely to achieve typical fat loss with endurance training.</li> </ul>	<ul style="list-style-type: none"> <li>No Recommendations</li> </ul>
	PPARGC1A	rs8192678	GG (+/+) GA (+/-) AA (-/-)	The G allele is associated with higher VO <sub>2</sub> max, a determinant of endurance capacity.	GG (+/+) <ul style="list-style-type: none"> <li>Your genotype is associated with higher endurance capacity and may experience above-average performance gains with endurance training.</li> </ul> GA (+/-) or AA (-/-) <ul style="list-style-type: none"> <li>You are likely to achieve typical or modest improvements in VO<sub>2</sub> max through regular aerobic training. Although you lack the genetic advantage associated with the GG genotype, it is unlikely to negatively affect your fitness gains unless you compete at a high level.</li> </ul>	<ul style="list-style-type: none"> <li>No Recommendations</li> </ul>

Please note that these SNPs are markers of genetic predisposition supported by a limited, yet evolving body of evidence. Due to the many factors that modify their effects on physiology, a positive result does not necessarily mean that any or all of the recommended supplements are needed.

<sup>+</sup>Dr. Kendall-Reed is a retained advisor to Pure Encapsulations.

PureGenomics® nutritional information is not intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease.

The information contained herein is for informational purposes only and does not establish a doctor-patient relationship.



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