

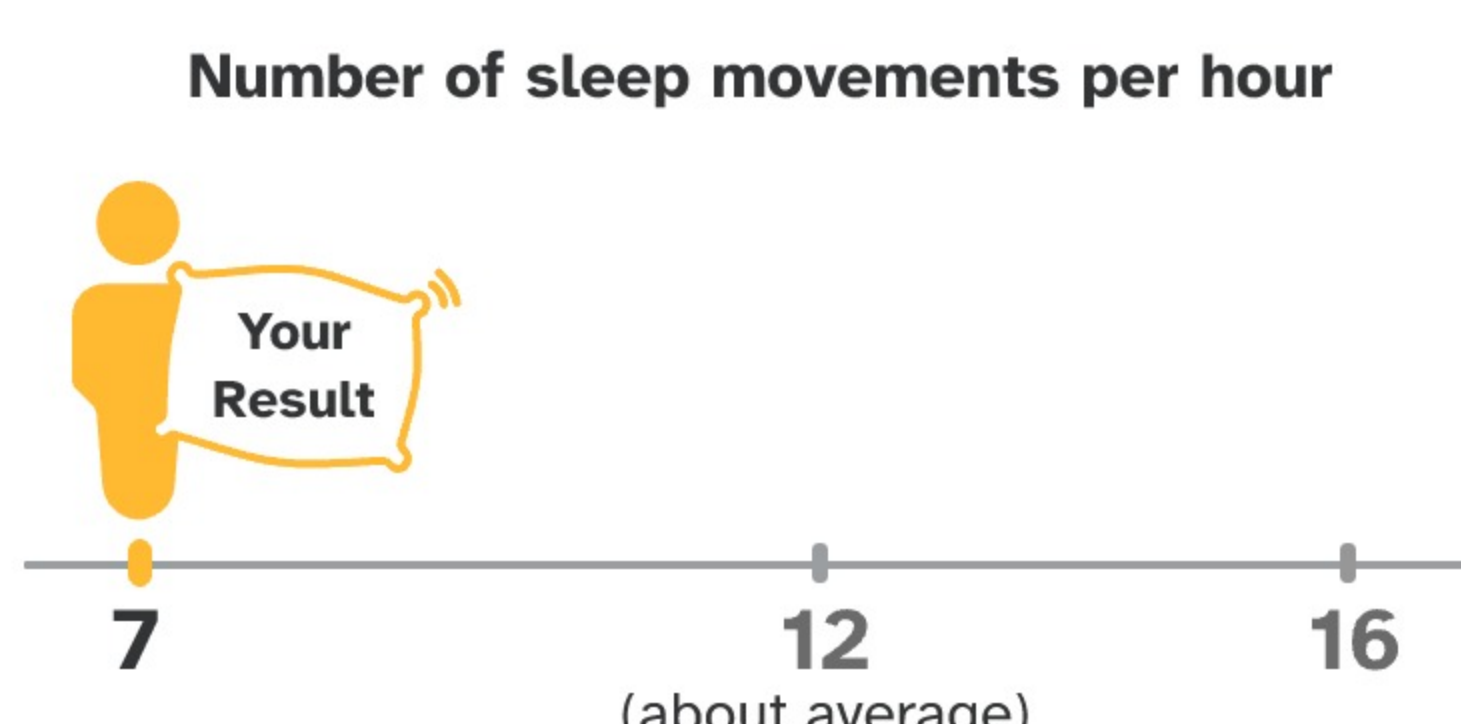
# Sleep Movement

Genetic factors influence how often people move their arms and legs while they're sleeping.

[Overview](#) [Scientific Details](#)

Jamie, based on your genetics, you're likely to move **less than average** during sleep.

Several studies have shown that a genetic variant is associated with how much people move their arms and legs in their sleep. One of these studies found that people with your genetic result tend to move about 7 times an hour during sleep. On average, people move about 13 times an hour.



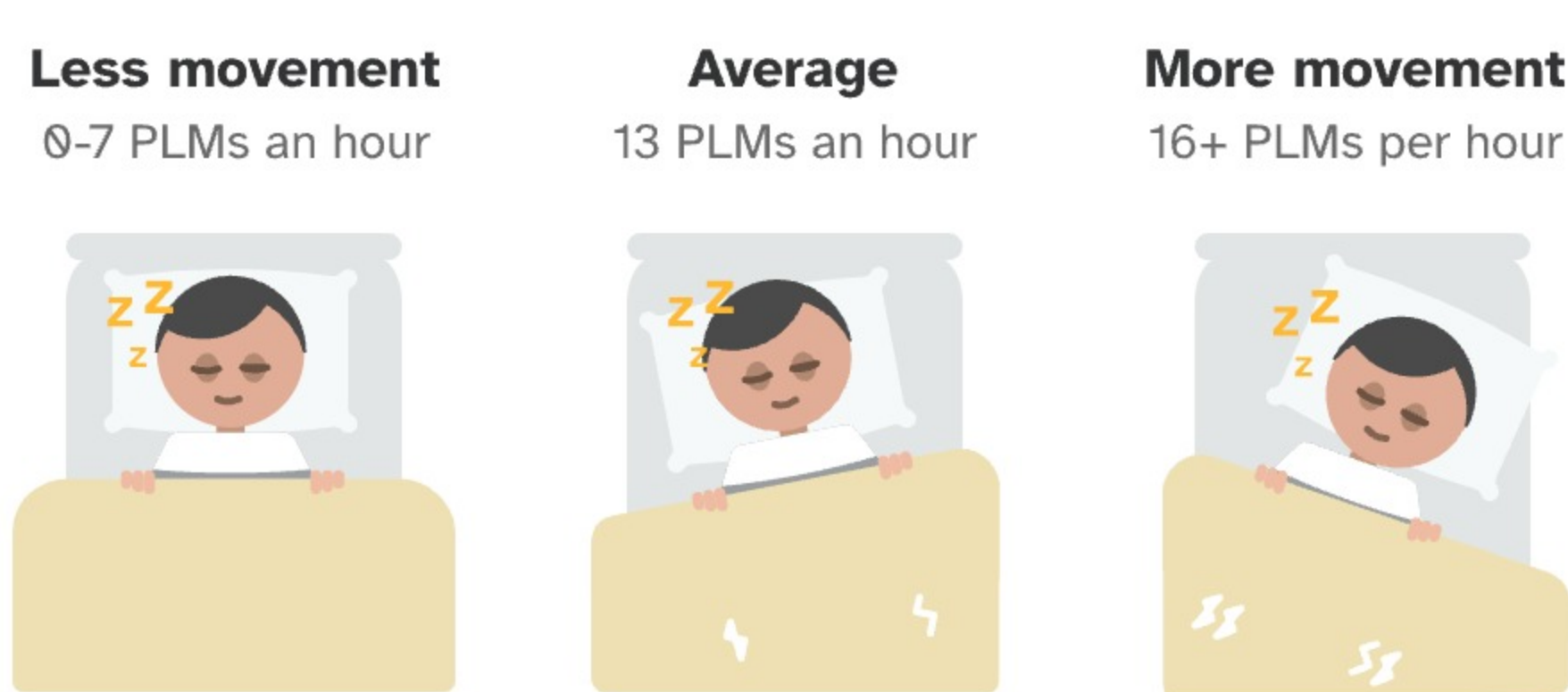
### What you can do

Sleep movements aren't a problem for most people. But for some, frequent movements can make it hard to get restful sleep. If you think frequent movements may be disrupting your sleep, consider talking to a healthcare professional.

## More About Sleep Movements

### Sleep movements in the laboratory

Scientists detect sleep movements by placing electrodes on the arms and legs of a sleeping person. The involuntary limb movements people make while sleeping are called periodic limb movements (PLMs). One study showed that the average person has around 13 PLMs an hour, but there's a wide range of movement amounts. Some people hardly move at all, and a few people may move more than 100 times per hour.



### Genetics

This report looks at a genetic marker in the BTBD9 gene. There are two possible versions of this marker, the A variant and the G variant. For each copy of the A variant a person has, they're likely to move their limbs an additional 4-5 times per hour while sleeping, relative to people with two copies of the G variant. But scientists still don't fully understand how this variant influences sleep movements.

	Genetic result	What it means
You	GG	Likely to move less than average
	AG	Likely to move about an average amount
	AA	Likely to move more than average

[See the percentage of customers with these results](#)

### The biology of sleep movements

Some evidence suggests that the BTBD9 protein affects how the body stores iron, which could influence how the brain regulates sleep movements. Some of the brain areas that store the most iron are also involved in regulating movements. The brain uses iron for many functions, including building molecules that brain cells use to communicate with each other.



### What else can influence sleep movement?

Besides the genetic variant in this report and other variants, many other non-genetic factors can influence sleep movement.

**Age:** In general, older people experience more sleep movements than younger people.

**Birth sex:** On average, males experience more sleep movements than females.

**Alcohol:** In one study, consuming two or more alcoholic drinks per day was associated with more sleep movements.

**Diet:** In some studies, having more sleep movements is associated with low levels of iron in the blood. [Learn more about healthy foods with plenty of iron.](#)



**This report does not diagnose any health conditions or provide medical advice.** Consult with a healthcare professional before making any major lifestyle changes or if you have any other concerns about your results.

## Keep exploring your Wellness results.

**Contribute**

By contributing to research, you could help us develop more Wellness reports.

**Compare**

Compare your results to your family and friends.

Did you find this interesting?



Give the gift of DNA discovery.

Gift a kit

Refer friends, earn rewards.

Get reward

- ANCESTRY
  - Ancestry Overview
  - All Ancestry Reports
  - Ancestry Composition
  - DNA Relatives
  - Order Your DNA Book

- HEALTH & TRAITS
  - Health & Traits Overview
  - All Health & Traits Reports
  - My Health Action Plan
  - Health Predisposition
  - Pharmacogenetics
  - Carrier Status
  - Wellness
  - Traits

- RESEARCH
  - Research Overview
  - Surveys and Studies
  - Edit Answers
  - Publications

- FAMILY & FRIENDS
  - View all DNA Relatives
  - Family Tree
  - Your Connections
  - GrandTree
  - Advanced DNA Comparison



# Sleep Movement

Genetic factors influence how often people move their arms and legs while they're sleeping.

Overview

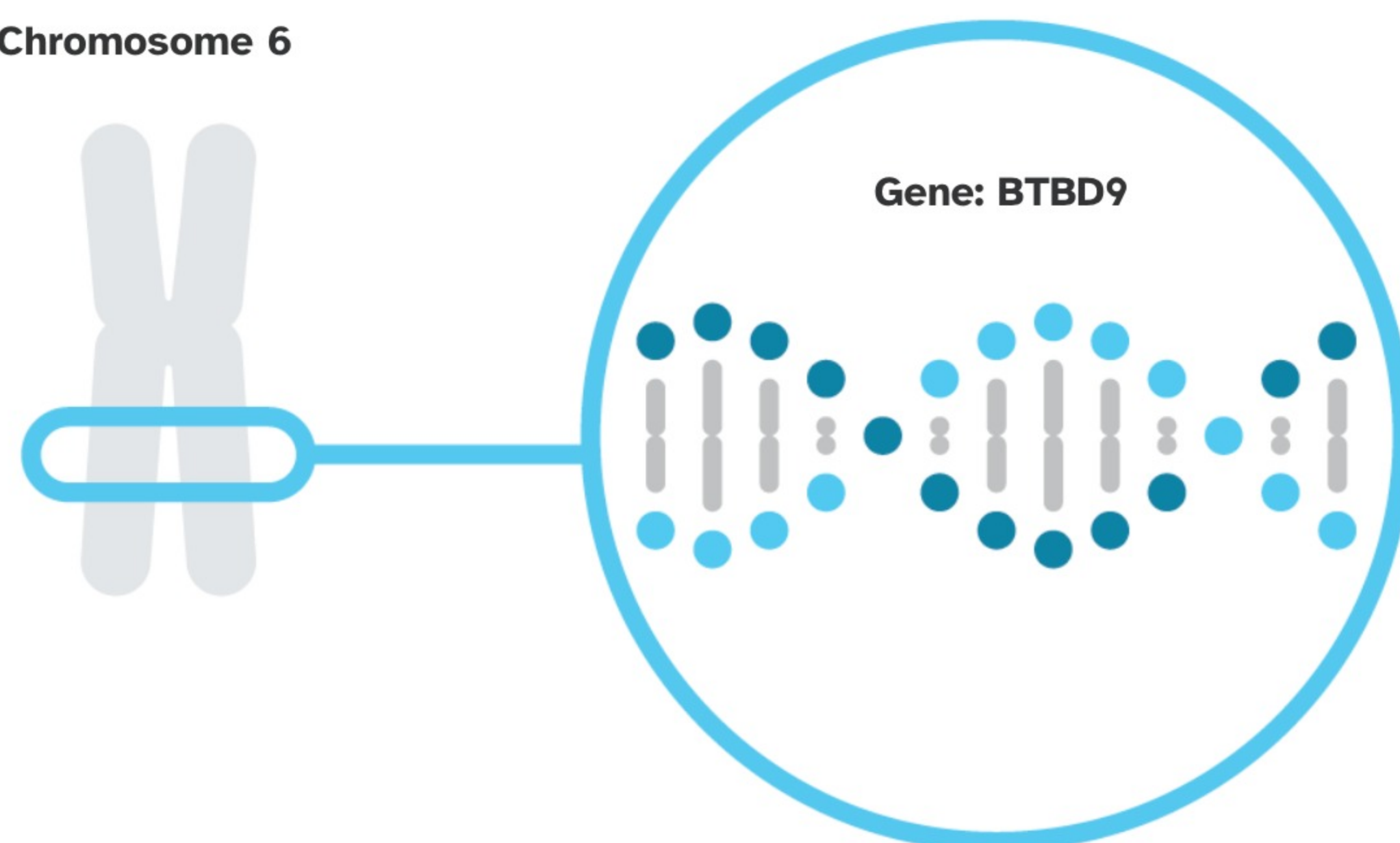
Scientific Details

Sleep movement is influenced by a genetic marker in the BTBD9 gene.

BTBD9

The BTBD9 gene contains instructions for making a protein called "BTB domain containing 9". Not much is known about the function of this protein, but it does appear to be important for a variety of processes including iron metabolism, sleep, movement, and sense of touch.


Chromosome 6



You have two copies of the G variant.

Variants Detected

View All Tested Markers

Marker Tested	Your Genotype*	Additional Information
<p><b>rs3923809</b> Gene: BTBD9 Marker: <b>rs3923809</b></p>	<p><b>G</b> Typical copy from one of your parents</p> 	<p><b>G</b> Typical copy from your other parent</p> <ul style="list-style-type: none"> <li>Biological explanation</li> <li>Typical vs. variant DNA sequence(s)</li> <li>Percent of 23andMe customers with variant</li> <li>References [ 5, 7, 10 ]</li> </ul>

\*This test cannot distinguish which copy you received from which parent. This test also cannot determine whether multiple variants, if detected, were inherited from only one parent or from both parents. This may impact how these variants are passed down.

23andMe always reports genotypes based on the 'positive' strand of the human genome reference sequence (build 37). Other sources sometimes report genotypes using the opposite strand.

## References

- Aldrich MS et al. (1993). "Alcohol use and periodic limb movements of sleep." *Alcohol Clin Exp Res.* 17(1):196-2.
- Beard JL. (2001). "Iron Biology in Immune Function, Muscle Metabolism and Neuronal Functioning." *J Nutr.* 131(2S-2):568S-579S.
- DeAndrade MP et al. (2012). "Motor restlessness, sleep disturbances, thermal sensory alterations and elevated serum iron levels in Btd9 mutant mice." *Hum Mol Genet.* 21(18):3984-92.
- Haba-Rubio J et al. (2016). "Prevalence and determinants of periodic limb movements in the general population." *Ann Neurol.* 79(3):464-74.
- Kripke DF et al. (2015). "Genetic variants associated with sleep disorders." *Sleep Med.* 16(2):217-24.
- Li J et al. (2015). "Association with low ferritin with PLM in the Wisconsin Sleep Cohort." *Sleep Med.* 16(11):1413-8.
- Moore H 4th et al. (2014). "Periodic leg movements during sleep are associated with polymorphisms in BTBD9, TOX3/BC034767, MEIS1, MAP2K5/SKOR1, and PTPRD." *Sleep.* 37(9):1535-42.
- NIH. "Iron: Dietary Supplement Fact Sheet: Sources of Iron." NIH Office of Dietary Supplements.
- Scofield H et al. (2008). "Periodic limb movements during sleep: population prevalence, clinical correlates, and racial differences." *Sleep.* 31(9):1221-7.
- Stefansson H et al. (2007). "A genetic risk factor for periodic limb movements in sleep." *N Engl J Med.* 357(7):639-47.

## Change Log

Your report may occasionally be updated based on new information. This Change Log describes updates and revisions to this report.

Date	Change
May 4, 2017	Sleep Movement report updated with revised content and design.
March 30, 2016	Sleep Movement report created.



Give the gift of DNA discovery.

Gift a kit

Refer friends, earn rewards.

Get reward

ANCESTRY

- Ancestry Overview
- All Ancestry Reports
- Ancestry Composition
- DNA Relatives
- Order Your DNA Book

HEALTH & TRAITS

- Health & Traits Overview
- All Health & Traits Reports
- My Health Action Plan
- Health Predisposition
- Pharmacogenetics
- Carrier Status
- Wellness
- Traits

RESEARCH

- Research Overview
- Surveys and Studies
- Edit Answers
- Publications

FAMILY & FRIENDS

- View all DNA Relatives
- Family Tree
- Your Connections
- GrandTree
- Advanced DNA Comparison