

# why is time under tension resistance training the best for women looking to optimize hormone health?

Time under tension (TUT) resistance training is particularly beneficial for women looking to optimize hormone health due to its unique physiological effects on muscle and hormonal systems. Here's why:

## 1. Hormonal Optimization

- TUT training, especially with slower tempos, can influence anabolic hormones like growth hormone (GH) and testosterone. These hormones play a key role in muscle repair, fat metabolism, and overall hormonal balance in women<sup>[1][2]</sup>.
- Studies suggest that resistance training with increased TUT may improve levels of sex hormone-binding globulin (SHBG) and reduce androgen excess, which is particularly beneficial for women with conditions like polycystic ovary syndrome (PCOS)<sup>[3]</sup>.

## 2. Metabolic and Mitochondrial Benefits

- High TUT increases skeletal muscle energy turnover and metabolic stress, which can stimulate mitochondrial biogenesis and angiogenesis (formation of new blood vessels). These adaptations improve oxidative capacity and metabolic health, both of which are crucial for hormonal regulation<sup>[4][5]</sup>.
- Such training also enhances insulin sensitivity, which is vital for maintaining stable blood sugar levels and preventing hormonal imbalances<sup>[3]</sup>.

## 3. Stress Reduction and Cortisol Management

- Resistance training with controlled TUT can help modulate cortisol levels by balancing stress responses during exercise. This is important since chronic high cortisol can disrupt other hormones like estrogen and progesterone.

## 4. Feasibility for Different Life Stages

- For menopausal women, resistance training improves quality of life by alleviating symptoms associated with hormonal changes, such as reduced bone density and muscle mass loss<sup>[6]</sup>. TUT protocols are particularly effective because they emphasize controlled movements that are safe and accessible.

## 5. Muscle Adaptations Without Overtraining

- Slow-tempo resistance training (high TUT) leads to greater muscle endurance and hypertrophy without the need for heavy weights or high-impact exercises, which can be taxing on the body<sup>[7][8]</sup>. This makes it ideal for women aiming to balance strength gains with recovery.

In summary, TUT resistance training supports hormonal health by promoting anabolic hormone production, improving metabolic efficiency, reducing stress-related hormonal disruptions, and offering a sustainable exercise modality across different life stages.

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1. <https://www.semanticscholar.org/paper/05dd54272e5df56267838fcf5c5cf2a92adc45de>
2. <https://www.semanticscholar.org/paper/b08a5dc4e0aee104cc4e15c6c72d26016f055770>
3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9590069/>
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